

AMERICAN VETERINARY REVIEW.

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EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, March 15, 1910.

COLIBACILLOSE OR DIARRHOEA OF YOUNG ANIMALS.—Among the microbial diseases which are most frequently met with in young domestic animals, three are principally deserving attention, viz.: Septic Pleuro-pneumonia, Polyarthrititis and Diarrhoea. This last one is the most frequent and the most serious. It was the subject of an important lecture delivered by Prof. Van Der Heyden and was resumed in the *Annales de Medecine Veterinaire* of Bruxelles. Diarrhoea is not a morbid entity by itself, but a symptom common to several affections, which are essentially different in their causes. The principal infecting agent, which has been found most commonly in diarrhoea is the virulent coli-bacillus, hence the name of coli-bacillus which is given to contagious diarrhoea. The virulent coli-bacillus does not differ morphologically from the ordinary bacillus, normal host of the intestines of animals. Perhaps it is the same which under the influence of some conditions has become virulent. It assumes the form of rods, rather thick at their round extremities and often is united by pairs. They are mobile, grow poorly in acid media, produces gases in sugar media and coagulate milk. They secrete very dangerous toxines. They also present this peculiarity of not being identically the same everywhere they are found. The one coming from one farm, for instance, differ-

ing from that of another. By its great natural diffusion, this pathogenous agent is always ready to invade the organism of newly born animals, whose umbilicus, yet uncitrized, constitutes a door of entrance widely open to the introduction of the virus; there is in that region a group of blood vessels more or less obstructed by clots, which are excellent media for the penetration of the germs, and even at the time of parturition, when the rupture of the allantoid takes place, the bacillus can, with the greatest facility enter the urachus to reach the bladder, grow, multiply and infect the organism. Besides this, the mouth is also a way of entrance. Indeed, opening and closing at every moment, by the sucking actions of the foetus still in utero, the mouth becomes an organ of reception for these same pathogenous agents, which are then swallowed and carried into the stomach; when finding its contents still acaline, they can cultivate and travel in mass in the small intestines.

From these considerations one can see that the treatment of this affection must be principally preventive. Hygienic measures for both the mother and the new born product; aseptic ligature of the umbilical cord, antiseptic of the stump. To prevent the infection by the mouth, this can be protected with a light muzzle, kind of little basket, and to modify the acidity of the contents of the stomach drenches will be frequently given to stimulate the immediate functions of the gastric glands. The curative treatment is generally accompanied with failures. Astringents and anti-diarrheic preparations can only at best have but a very relative effect and constitute after all but a treatment of symptoms comparatively useless.

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However, as the disease is of microbial origin, a powerful means of control is offered by Serotherapy. In the preparation of the serum of coli-bacillose, it is of the utmost importance to proceed with a great deal of care on account of the great toxicity of the cultures of the coli-bacillus. A very small quantity of pure killed culture shall be used first, so as to obtain an antitoxic im-

munity. After each injection, the horse reacts with a quite high thermic elevation, accompanied with general symptoms. After one or two days these have subsided, and if the condition of the animal allows it, they are repeated at intervals of 10 or 15 days. After several injections, more virulent cultures are used, in increasing doses, carefully calculated so as to promote a new formation of lysines or antitoxines. After several weeks the serum of the horse that has received the treatment is very active against the coli-bacillus that had been employed.

But the varieties of coli-bacilli are quite numerous, therefore it is necessary to immunize the horse with several different varieties, and according to Jensen at least one dozen is necessary. This is the reason why the preparation of an anti-coli-bacillose serum requires more than a year and as besides this, there is often possibilities of pyogenous infections by the injections, it is not surprising if the price of the serum is very high. However, when the serum is sufficiently polyvalent, the blood is drawn rigorously aseptically, the serum of the immunized horse is allowed to settle and is placed in vials where it can be kept for one year with all its active properties. The following are the results recorded by the author. To the curative point of view, with a serum obtained with cultures of fourteen different breeds of coli-bacilli, the facts are not yet sufficiently numerous to allow conclusions. Yet in calves, it has been successful in some and not in others. But as a preventive agent the serum has proved very active in places where before most of the calves had died with diarrhoea; in another, where the animals were also dying, two animals had not been treated preventively, and both contracted the disease. The failures may, however, be easily explained by the fact that the treatment had been applied too late, or again by the presence of other affections or bad hygiene, etc. Nevertheless, the results that have been obtained are very encouraging and deserve the attention of those who may come in contact with that disease of young animals.

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OTHER METHODS OF SKIN STERILIZATION.—In previous chronicles (October, 1909, and March, 1910) the methods of disinfecting the field of operation of the skin by iodine have been treated, but the subject is of sufficient interest to deserve a few more remarks. It will be remembered that one of the methods patronized was that of Grossich, against which it was objected to because of its failing in giving the primordial desideratum of all methods of disinfection, namely, the elimination and most complete removal of all that could soil a field of operation. It is true that washing with hot water, soap and brushes gives in the majority of cases almost complete satisfaction. But still there are objections, and among them is that of interfering with the perfect penetration of the tincture of iodine, and therefore a thorough sterilization. In the *Zentralblatt für Chirurgie*, there are two modifications of the Grossich method which I am pleased to reproduce. In the first, Prof. A. Bogdan, of Hungaria, has had the idea of substituting for the washing, the rubbing of the skin with a tampon of gauze dipped in iodated benzine at 1 to 1,000. Benzine dissolves fat better even than ether, is less fluid and less volatile, consequently is superior to it in removing all epidermic remains covering an operative field. Besides this, dissolved in benzine, the iodine possesses already a marked bactericid power. Prof. Bogdan's technic is very simple. The friction with iodated-benzine is made with sterilized wadding pads or plugs, well soaked in the solution two or three times. The friction lasts two minutes. The coating over with the tincture of iodine is done immediately after. It is repeated several times so as to have the skin well soaked with it, and that the maxima of bactericid effects be obtained. In 800 operations where the method has been resorted to, only perfect results have been recorded.

The second method of sterilization of a field of operation is due to Prof. O. Von Herff, of the University of Basle. For him the ideal antiseptic of the skin is alcohol. But employed alone, it has the objection of hardening, of tanning immediately the superficial layers of the skin, and to close in the deep the patho-

genous germs which it is so essential to destroy or eliminate. Previous washing and brushing with hot water fulfil this last condition, it is true, but they require too much time, and again, soap water softening the skin, they have an action directly antagonistic to that of alcohol, and consequently they must not be used when the sterilization with alcohol is considered. Prof. von Herff instead of them uses acetone. It possesses powerful lipolytic and karyolytic properties, it takes off perfectly from the skin all the epidermic detritus and fatty substances that cover it, and having dehydrating qualities, instead of interfering with the action of alcohol, it promotes its penetration in the skin, without reducing its concentration and bactericid powers.

Equal parts of acetone and alcohol mixed together form an excellent association for immediate use. Rub for five minutes until the parts are well dry, with flannel plugs dipped in the mixture. Then careful drying with dry compresses and coating over with a protecting mixture made of benzoin, rosin of damar of each 10 grammes, other 120 per cent. of an alcoholic iodurated solution of iodine. When the operation is ended and the sutures made, compresses of the same mixture are used in the dressings. This sterilization with acetone alcohol has given best results in 280 cases of abdominal surgery.

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THE MICROBE OF CONTAGIOUS PLEURO-PNEUMONIA OF CATTLE.—Since the researches of Nocard and Roux, the germ of contagious pleuro-pneumonia belongs to the group of microbes, so small in size that they pass without difficulty through a Chamberland or a Berkefeld filter, which present an obstacle to ordinary microbes and are not allowed to pass through them. For these reasons they are known as invisible or ultra-microscopic microbes on account of the impossibility to see them or at least to precise their morphology by microscopic examination. It is known that by a new process of culture, in collodion bags, Nocard and Roux did succeed in reproducing the pleuro-pneu-

monia virus. After several days of incubation in the rabbit, they observed that a slight cloudiness had developed in the culture, which certainly was of microbial nature; the contents of the bags used as witnesses having preserved their clear and limpid aspect. And yet, the examination with the microscope, with or without coloration, detected in the cloudy fluid only extremely small granulations of so minute size that their exact shape could not be made out. This culture thus obtained could itself be cultivated and reproduced in series with the same physical characters and having its specific proper virulency. Later on these experiments were renewed with Dujardin-Beaumetz, leaving the collodion bags aside, that is *in vitro*, in a liquid media, to which beef serum was added and in which the germ developed well, but always under the form of animated granulations and without well defined morphology. All these facts we have presented to our readers at the time of their publication.

The question was at this point when the learned director of the Pasteur Institute of Bruxelles, Mr. Bordet, took it up. He has obtained very remarkable results, not only to the point of view of this very microbe of contagious pleuro-pneumonia, but also to the more general consideration of the study of the various invisible microbes. He has proved before the Royal Society of Medical and Natural Sciences of Belgium that some virus classified in the group of the ultra-microscopic agents and specially that of contagious pleuro-pneumonia of cattle, were only abnormal forms of involution resulting from cultures of the microbe in nutritive media not sufficiently appropriated to them. In such cases, these organisms do multiply, it is true, and keep their specific virulency, but they also undergo deep modifications in their proper morphology. It is likewise the same for some microbes which normally have an elongated form well marked, and which affect in defectuous condition of their life the form of granulations.

Taking from a culture of bovine pleuro-pneumonia, coming from the laboratory of Dujardin-Beaumetz, in which only amorphous granulations could be seen, Mr. Bordet replanted it in a

media of defibrinated blood, which he had often tested for the cultivation of delicate microbes. In those cultures, no microbial growth could be seen, but the defibrinated blood became black all along the line of replantation. Preparations treated with Giemsa, by heat, the most powerful reactive known, showed no more simple microbial granulations like those in the previous cultures, but perfect spirochetes, very thin and rather long, with spires close together. This spirochete of pleuro-pneumonia varies very much in its length and sometimes it is very reduced. On solid media, the cultures reveal a long spirochete which is very thin. But on peptonized alkaline bouillon and fresh rabbit serum, Bordet has obtained rich cultures in which the microbes were stronger, easier to color, and therefore more readily visible. At any rate it is quite long, but sufficiently thin to pass through filters. To Belgium then belongs the honor to have established the fact that the microbe of Pleuro-pneumonia Contagiosa of Cattle is a spirochete. This new discovery and the method attached to it, opens a new and wide field to bacteriologists, and we can look for more great information relating to the morphology of other ultra-microscopic microbes.

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SPASMODIC INTESTINAL OBSTRUCTION.—This is the name that is proposed in the *Rec. de Medec. Veterinaire* by Mr. L. Naudin for an affection which he says has not been described in classical works and which, characterized by long persisting colics and complete arrest of defecation, present no explanatory cause at post mortem. Four observations have presented the following clinical picture: Sudden attack in the stable or while at work, shortly or a long time after meal, violent lasting colic with short moment of quietness at intervals. In the beginning of the attack, dropping of a few balls of normal feces and afterwards dry and coated. Conjunctiva normal, pulse slightly jerking and regular, flanks tight, borborygms loud, rectal examination negative, temperature normal. Some animals refuse all food, others

eat a little. After 6-10 hours constipation, which resists all kinds of treatment. The result of all purgatives being only an increase of the intestinal borborygms. This condition lasts between five to eight days and the animal dies suddenly, either in an attack of colic or after ten or twelve hours of quiet condition which seemed to indicate recovery. The post mortems which have been made were always negative. No volvulus invaginations or hernia, no coprostasis, no calculi, contraction or intestinal strangulation. The digestive canal was always perfect in its whole length, the floating colon and the rectum being empty, the cæcum and large colon containing normal quantity of soft or liquid feces. No rupture of organs, nor enteritis or peritonitis. Only evidences of fatal auto-intoxication by the degeneration and altered condition of the liver and kidneys with the congestion of the large serous membranes and sub-cutaneous cellular tissue.

Having read the record of two cases in human practice of obstruction by spasmodic contraction, and of the autopsy of one of these cases when the spasm having disappeared, there remained nothing to explain the symptoms of obstruction exhibited by the patient, Mr. Naudin thought that the same condition may have been present in his own cases, and he suggests that the spasms, if there was any, may have been located at the origin of the floating colon. Is such condition possible of a diagnosis? Perhaps, if one thinks of it. Many of the ordinary causes of colic, their modes of manifestation will often allow one to reduce the number of the causes of the obstruction to spasms, calculus or strangulation and by a possible exclusion of the two last; that of spasmodic contraction will remain. It is important to make out the diagnosis as the treatment and the indications will differ. No more excitation of the peristaltism, but on the contrary anti-spasmodic and sedatives, opiates, chloral, etc.

It may be asked, however, if instead of a new undescribed affection, it is not rather a new addition to the long history of the etiology of colic, possibly overlooked, that Mr. Naudin refers to in his article. As after all, there are many cases of abdominal troubles which are probably due to intestinal spasms, and which

are relieved, and in where no post mortem has been required. Consequently the spasms could not be confirmed.

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PARASITIC MAMMITIS.—Diseases of the udder are frequent in our large domestic animals and their manifestations are well known. Acute and chronic as well as specific inflammation are daily observed. It is not so evidently with parasitic mammitis, as the one recorded by Prof. Noussu in the *Recueil de Med. Veter.* might give an idea. If it is new, it is more than probable that closer observation will bring out others of similar nature.

A veterinarian was consulted for a cow in good milking condition in which the milk contained at times little worms. The milk was of course altered and its use might be dangerous. Yet the animal was in perfect health and did not present any evident external signs of mammitis. But at the milking the milk was yellowish, thick, grumelous and mixed with bloody striæ and thready blood clots. In fact the milk had the characters which are found in ordinary common epithelial mammitis. There was no general disturbance in any other function, no indications of progressive morbid process. Yet the worms were present. The teats being well cleaned, the milking was made in filtering it upon a piece of fine muslin, and among the clots of blood there were the parasites remaining on the filter, vermiculated, cylindrical, of pale reddish color and measuring variously between one millimeter and one centimeter in length. Swimming very actively when the milk was drawn, they seem to move as eels in the fluid that remained on the muslin. On further investigations as to the nature of the parasites, it was readily made out that they were not true worms, but only the larvæ of insects, which, examined by several entomologists, were finally classified as larvæ of *Chironomus*. The trouble of the cow was an accidental parasitism of the mammæ with infestation of external origin and not one of ordinary permanent source.

The *Chironomus* is a very small insect which lives in shady places round swamps or rivers. Their eggs hatch in time varying

between twenty-four hours and a few days, and their larvæ when reaching a proper media gradually develop until their complete transformation to adult insect. It is very evident that in this case the larvæ had penetrated the rather widely open mouth of the teats of the cow, from where possibly a drop of milk was oozing, or possibly again that the insect itself attracted by the same cause, deposited its eggs at the entrance of the teat and that when these hatched the larvæ penetrated directly in the udder. At any rate, the infestation was truly accidental and must have occurred as the animal was pasturing.

For the writer this peculiar trouble may not be such a rare exception. Many cases of mammitis considered as ordinary and benignant affections, even when they are accompanied with escape of blood clots may have similar and identical cause and likewise cases of mammitis which occur in summer, may be but temporary affection due to the development and multiplication of larvæ which take place when the external surrounding atmosphere becomes warm.

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INFECTIOUS GRANULAR VAGINITIS.—In several issues of the *Archivio Scientifico* there was published a report presented before the Royal Veterinary Academy of Italy, from which are extracted a few of the most interesting facts. Also known as Contagious Vaginitis, Infectious Vaginitis, Catarrh, this disease prevails in all central Europe, and is already well known in several countries, where its study has been extensively carried out.

It begins by a slight redness of a small portion of the vulvar mucous membrane which is soon followed, say after ten or fifty hours, by the apparition of small characteristic granulations. Some points strongly red in color, appear on the inflamed mucus and are the first stage of the formation of small elevations, which are semi-spherical, semi-ovoidal or again irregular and varying in size from that of a millet seed to that of a small wheat grain. These granulations are firm and analogous to lymphatic follicles; they are dark red, in severe cases of dark wine coloration, and when of long standing they become yellowish, hyaline

and transparent. They are not suppurating. Their number varies with the severity of the disease. The vulva is more or less oedematous with slight discharge of mucus and the vulva is more or less hyperesthesied. However, there is never abundant discharge from the vulva. There is no fever; some time urinary tenesmus is present, and now and then an animal may lose his appetite. These are the manifestations of the acute stage. They last one or two months and then the chronic stage follows; the granulations have become hyaline or transparent and resemble gelatine drops. This stage lasts from several months to several years. The disease is not easily communicated to bulls, even when this animal has served a number of diseased females. When it is transmitted there is acrobustitis and balanitis. In very severe cases sometimes orchitis.

Vaginitis by itself is not a serious affection, but it may prove disastrous for large establishments, as from 80 to 90 per cent. of the cows affected with infectious granular vaginitis do not become in heat, and after one or more years they are entirely sterile. Numerous abortions and premature deliveries are often observed, and also retention of foetal envelopes, endometritis, nymphomania, diminution and arrest of lactation and death of the newborn are among the sequelæ that may take place. The treatment is strictly local. Although many antiseptics have been advocated, Bacillol seems to give the best results when used either in injections, ointments, pessaries or other ways. Generally three or four weeks are required for the treatment.

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BIBLIOGRAPHY—OFFICIAL REPORT FROM CANADA.—DOCTOR J. G. Rutherford, V. S., H. A. R. C. V. S., the honorable ex-President of the A. V. M. Association, has favored me with a copy of his report to the Secretary of Agriculture of Canada for the year 1908-1909. Personally it has been a double pleasure to me—a flattering souvenir from the ex-President of the National Veterinary Society of America, and pleasant reading, the report being published in French. Among the matters of interest contained in the report, I notice principally the Comptes

Rendus of the Proceedings of the first meeting of the International Institute of Agriculture, which was held in Rome in 1908, and to which Dr. Rutherford attended as a delegate. The Veterinary Director General found himself in excellent company, as many of the various delegates present, coming from every part of the globe, were all more or less representing officers from their respective governments. Dr. Rutherford has the honor to be elected one of the members of the Permanent Committee.

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OATS' FOES.—(*Les Ennemis de L'Avoine*), by MM. Brocq, Rousseau and Edm. Gain.

Veterinary and agricultural literature needed precise documents relating to the special alterations of the various alimentary products which are given to animals. In writing this little book the authors have made the attempt to remedy to this condition, and their effort is a serious one. They have selected oats because of its great importance in equine alimentation and also because a knowledge of its alterations is of first necessity to insure a thorough hygienic food for the animals which partake of it. Having considered oats in a somewhat general sense, by treating it not only as grain, but also as fodder they have, as foes of oats, had in view to consider not only the parasites, vegetal and animal, but also the various diseases or accidents that may affect it, and then have divided their work in two parts. In the first the foes during the vegetation, and in the second after harvest. This division, perhaps a little arbitrary, was necessary for the presentation of the subject.

In the first chapter, five orders of the fungi living upon oats are considered. In chapter second, the nematods, acarians and insects that are found as parasitic animals of oats. In the third chapter are found the diseases or various accidents. The work is illustrated by twenty-four plates which deserve high praise for their clearness and neatness. There is at the end of the book a bibliographic list which the authors have tried to make clear so as to do away with numerous queer names given to fungi of

grains which are likely to confuse the reader. In its conciseness the book of MM. Brocq, Rousseau and Edm. Gain is one which will prove most useful to all those who are interested in the production of good and sound grains and fodders for animals. The work is published by Asselin and Houzeau of Paris. Price five francs.

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This same house has just brought out the fourth edition of a *Traite de Thérapeutique Vétérinaire* (Treatise of Veterinary Therapy), by Prof. Kaufmann.

When some time ago it was my great pleasure to notice the sixth edition of Prof. Winslow's, I wondered at the necessity of the rapid reproduction of a similar work on account of the constant additions that are made by the number of new drugs and of new therapeutic methods brought out and introduced in our practice. It is the same in all countries. The work of Prof. Kaufmann is a good addition to French literature on the subject. The arrangement of the work, the same as in previous editions, differs from others on the subject as in it the drugs are arranged by groups according to their action upon: First, the cause of the disease (antiseptic, antiparasitic and immunization); second, the tissues by local applications; third, on the various functions after absorption.

Immunization is the subject of a very interesting chapter in which the reader is readily made familiar with the means of defense of the organism against microbial infection, and where he has explanation of many new different expressions which have found their way of late in medical phraseology. The fourth edition of this veterinary therapy counts a number of references to new drugs and methods which have found recent admission in the arsenal of the daily practitioner.

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ANIMAL PARASITES AND PARASITIC DISEASES.—Second edition; revised, by B. F. Kaupp, M. S., D. V. S., is a little work

published by Alex. Eger, of Chicago. The work is divided into four chapters. In the first the Ectozoa are treated. In the second the Entozoa, in the third the Protozoa, and in the fourth general rules for the preparation of specimens are presented. This is quite a good part, one which the beginner will no doubt find interesting, as it gives him precious directions how to mount specimens for preservation and how to stain the most ordinary protozoa. A few words on the chemistry of animal parasites completes this very concise treatise, which is illustrated by numerous plates and photomicrographs made by the author. But it is far from being ready to supplant Newman translated by Fleming. Then?

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SUNDRY ITEMS.—Acknowledgment is made of the receipt of Bureau of Animal Industry Circular 68, revised, on "The Diseases of the Stomach and Bowels of Cattle," by A. J. Murray, M. R. C. V. S.

Bulletin 424 on "The Need of Controlling and Standardizing the Manufacture of Veterinary Tetanus Antitoxine," by John R. Mohler, V. M. D., and Adolph Eichhorn, D. V. S., already noticed in previous issues.

Bulletin No. 3 from the Experimental Station of Michigan Agricultural College on "Studies of Agglutination Reactions in Hog Cholera During the Process of Serum Production," by Charles E. Marshall.

A. L.

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LAWS GOVERNING VETERINARY PRACTICE.

For a great number of years, each year has added another state to those having laws regulating the practice of veterinary medicine, or greater strength to the laws already on the statute books, by the institution of state boards of veterinary examiners.

The REVIEW has always felt an especial interest in this manifestation of advancement in veterinary medicine, and has endeavored to keep it clearly before the profession of the country

by publishing annually for a number of years a table indicating the requirements of state laws governing the practice of veterinary medicine in each of the states throughout the United States. Obviously the value of such a table depends entirely upon its accuracy, and we owe it to our readers to exhaust every means available to bring it up to the date of publication, which, this year, will be the June issue. So we ask every secretary of a state society and executive office of a state examining board to consult a May, 1909, number of the *AMERICAN VETERINARY REVIEW*, turning to page 218, where he will find the latest publication of the table referred to, making any corrections that apply to his particular state, and mail same at once to the REVIEW office, so that the work of revision of the table may be begun early. It is not a heavy task to impose upon a man to ask him to take up his one particular state and note whether what appears under each heading across the page applies properly to the conditions as they exist to-day. Yet see what it means to him and every other reader of the REVIEW. It means that in return for that few minutes' work, he will assist the REVIEW editors to furnish him the correct statistics on fifty-four states. Secretaries of state societies and presidents of examining boards, may we ask that you furnish the REVIEW that data at once? Do not let *your* state be listed inaccurately.

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A. V. M. A. MATTERS.

Dr. Archibald sends encouraging news in regard to headquarters and hotel accommodation. The Palace Hotel has been secured as headquarters, and the rates both there and in the other hotels mentioned are certainly reasonable, but he urges that the members engage them now, for the very good reason he has given. Secretary Lyman has straightened out the transportation problem on the plan suggested by Dr. Hoskins in the March issue of the REVIEW, and Dr. Nelson is also preparing an itinerary on the same plan, which we shall publish in our next issue.

ORIGINAL ARTICLES.

LIP-AND-LEG ULCERATION (NECROBACILLOSIS) ITS CAUSE AND TREATMENT.

By JOHN R. MOHLER, V.M.D., WASHINGTON, D. C.

INTRODUCTION.

For the past few years, especially during the winter season, the Bureau of Animal Industry has been appealed to on numerous occasions from various sections in the Northwest to investigate attacks of diseases affecting the sheep in these localities and to furnish aid in the treatment and eradication of these maladies. From the increasing number of letters received it was apparent that in some sections a serious condition of affairs existed and that it was not an idle appeal that had been made for help. Under a great variety of names a disease was described which seemed to point to a more or less common origin. In short, this was found to be the case when inspectors were sent into the infected regions, and what was described under so many different names was found to be in reality various manifestations of one and the same disease, namely, infections with the necrosis bacillus, a germ that was described early in the eighties by various European investigators and has since been found to be very widely scattered and the causative agent of many of the ailments which affect domestic animals. In this connection it may be stated that all the differing manifestations of the infection by the necrosis bacillus in the various species of animals are frequently brought together under the one general term—necrobacillosis.

* Presented at the recent convention of the National Wool Growers' Association, at Ogden, Utah, in connection with the paper by Dr. A. D. Melvin, published in the April issue of the Review; page 38.

During the work of the past year a very contagious form of sore mouth in lambs was observed, and studies as to its causation were instituted. This affection, with which every experienced sheep owner is more or less familiar, is designated by various names, such as sore mouth, sore lips, warty mouth, warty nose, *impetigo labialis*, *ecthyma stomatitis*, etc.

The disease has been observed in this country in both the East and the West as well as in various parts of Europe off and on for the past twenty years, and until quite recently little effort has been made to find the causative agent or to check its spread. European investigators are not at all in accord in attributing a cause for the malady, but that they have been working with this same sore mouth affection is not to be doubted when one reviews the literature on the subject and reads the very accurate descriptions of the lesions found. If there were any doubts from the published descriptions they would be dissipated by the photographic illustrations that accompany the articles. Strange as it may seem, most of these writers have not definitely determined the cause of the trouble, but a small number of able investigators have good reason for incriminating the bacillus of necrosis.

It has previously been the habit of many sheep owners to ascribe the cause to coarse grass, bristle grass, shad scale, bunch grass, clover, alfalfa, beet tops, and to weaning of the lambs, to dew on the grass, to frost, and to a host of other causes. These in all probability are highly predisposing factors, but not the actual cause.

The older veterinarians, before anything was known about the role of bacteria in the causation of disease, also held to the same opinions about the causes of disease in general, but a review of their writings shows that their opinions were only theories or guesses at the real cause. No experiments were made to prove their assertions, but, as in human medicine, many of the obscurities of disease are now being uncovered by definite, convincing, and indisputable researches.

It is a significant fact that from numerous specimens examined by the Bureau of Animal Industry last year the necrosis

germ has been isolated, and inoculation both of lambs and older sheep with the diseased tissues from the lambs' mouths has produced the disease. No observing man could advisedly question its contagiousness, and from this fact alone the Bureau is bound to take some cognizance of its existence.

HISTORY.

Some of the early writers seem to have been convinced that the disease termed lip-and-leg ulceration in this country was in no degree contagious, but at a later period many investigators opposed this opinion and strongly maintained that it spread from sheep to sheep by means of some contaminating germ.

Gilruth, of New Zealand, in 1900 reported on a disease which he termed acute facial eczema in sheep, manifested by an eruption on the face and ears of lambs. He considered it at that time to be due solely to errors of diet from eating rich feed like rape or clover. His assistant, Clayton, made an excellent report on this eruptive disease of the lips and face among a band of lambs. A large percentage were affected, the whole of the face in some cases being covered by a mass of scabs. In others the trouble was located around the mouth and nostrils only. The feet and legs were not affected, but the lambs fell off considerably in condition. In this outbreak Clayton could find nothing to account for it in the way of rape or clover, but nevertheless considered it to be dietetic. Subsequently, in 1906, Gilruth described the appearance of a similar disease affecting the skin of the mouth and nose of sheep in New Zealand. He called it acute dermatitis of the face, and his experiment demonstrated fairly conclusively that a micro-organism was the cause. About 100 of the sheep became affected, and only a few died, not as a direct result of the disease, but because of the interference with feeding and breathing induced by swelling of the skin of the lips and nostrils.

In 1907 Gilruth recorded the same disease under the term acute stomatitis affecting the lips and mouth of lambs, and found the cause to be the same germ that caused the disease the pre-

vious year among older sheep, although the actual lesions produced were somewhat different. The owner had used the pasture for five years, but previous to the outbreak no affection of the mouths or lips of any of the flock had been observed at any time. A short time after lambing, the shepherd observed several lambs with what he described as scabs affecting the lips. Believing the disease to be contagious, he slaughtered and buried the first ten or twelve he found affected. Fresh cases appearing with great rapidity, he notified the chief veterinarian and requested an investigation. After the lambs were subjected to the usual operations of earmarking, castration, and docking, 50 per cent developed more or less extensive ulcerative sores on the stump of the tail, while a considerable number showed similar lesions around the earmarks. Some of these tail and ear ulcerations occurred on lambs which showed no lesions of the lips and mouth. Curiously enough, in no instance were lesions found present in the region of the scrotum after cutting, a fact the more remarkable because the disease had been transferred in many cases from the lips and mouth of affected lambs to the udder and teats of their mothers.

In 1908 Gilruth again reported upon sore lips in lambs in New Zealand. Treatment of one band under investigation was very perfunctorily carried out, and four days after the lambs were docked and castrated 7 of the lambs and 1 ewe were found dead. All the dead lambs were wethers, and in each case the scrotum was tremendously swollen, ulcerated, and gangrenous. Only a small percentage of lambs were affected with sore mouths, but nearly all showed ulceration of the tail stumps, while the scrotums of over 80 per cent. of the castrated lambs were so affected as to require treatment, and the same virulent germs were found in all. Besides the lesions and deaths among the lambs there was at the same time a similar disease affecting the ewes of the same band, which occurred principally in the neighborhood of shear wounds and on the udders through contamination by the sore mouths of the lambs. It therefore seemed quite certain that the shears as well as the

docking knife became contaminated with the specific germs. Gilruth in his last report states that while at first all the cases brought to his attention were confined to lambs, he has since seen the disease among two-tooth ewes, and even older ewes. The disease was proved to be contagious by inoculating two healthy ewes.

McFadyean, in 1901, described a disease similar to lip-and-leg ulceration, which is usually met with in England as a troublesome affection of ewes and young lambs and called malignant aphtha. In the case of the lambs the disease is manifested by the formation of sores on the nose or lips, and the ewes develop similar sores on the teats and udder. The disease apparently is spread only by direct application of matter from the sores to the skin. This author states that in Scotland a disease exists among the lambs of any age, and rarely in adult sheep, known locally as orf. He states that it is not of rare occurrence, but has received little attention in veterinary literature. On the face the lesions are present on the hairy surface of the lips and around the nostrils. On the legs the sores may form anywhere between the hoof and the knee or even higher, and sometimes the sensitive structures around or between the claws are involved.

Armitage, in his English work, "The Sheep Doctor," describes a contagious ecthyma or malignant aphtha which corresponds very closely with the condition seen in the lambs in the sheep-raising sections of the Northwest. He says:

"In the lamb the disease first attacks one or both nostrils, the margins of the lips, and the front of the gums. The skin first shows an elevated portion of skin which is tender from inflammation, shortly converted into a spreading sore, and later covered by a scab which is readily removed. Similar changes are seen on the lips and gums, succeeded by a croupous covering varying considerably in size, often productive of much damage to the gums."

Berry, in 1901, reported this disease as existing in England, Scotland, and Wales, where it is known as contagious pustular dermatitis, orf, or crusta labialis, and is said to be more familiar to the shepherd than to the veterinarian. Sheep of any age seem to become infected, but it is more frequently and readily transmitted among lambs or sheep under one year old. In many outbreaks nearly all the sheep became infected, and diseased sheep brought into a band will transmit the disease to many of the healthy animals within a fortnight after mixing the flocks. The fatality of the disease is not great, although fluctuating from time to time.

W. Williams, in 1894, described under the term orf, or carbuncle of the coronet in sheep, a disease occurring more particularly in young sheep, but occasionally in old ones. It is characterized by lameness, inflammation of the coronet or the space between the claws, which later develops into angry-looking ulcers. These ulcers may attain a large size, fill up with granulations, or bleed readily. Similar ulcers or sores may appear on the face and head. It is not a fatal disease, but is troublesome, and when well established is slow to heal. Williams also used the term crusta labialis for the affection when the lesions are more marked on the face, although the eruption is seen on the coronets and pasterns as well as the lips and nostrils.

Hutyra and Marek, of Hungary, reported in 1906 the presence of pustular stomatitis in two imported bucks. Three days after they were turned in with native sheep the latter developed symptoms, and in a short time almost the entire band of 500 sheep showed eruptions and ulcers on the lips, corners of the mouth, and edge of the nostrils. The disease spread rapidly, but was in a benign form, the only two animals which died developing lesions in the lungs.

Hasenkamp, in 1908, observed numerous cases of ulcerative stomatitis in sheep of Germany which were affected with foot rot, and was able to incriminate the *Bacillus necrophorus* as the causative agent of both these conditions. In some of these sheep

be observed embolic areas of necrosis in the liver and lungs as a result of secondary infection.

Moussu, of France, and Dollar, of England, describe an ulcerative stomatitis of sheep which corresponds in all particulars to the disease as seen in western lambs in the United States, but add that they have observed a mortality of 15 per cent.

Besnoit, another French writer, in 1901 gave a good description of this same ulcerative stomatitis in lambs and goats, and referred to other authors who had previously written on the same subject. The disease was formerly attributed to dirt and carelessness, but Besnoit considers it a grave and contagious malady due to a specific virulent germ.

In the work of Cadéac, published in Paris in 1908, a very good description of ulcerative stomatitis of lambs is given, and the necrosis germ is given a prominent place in the causation of this disease. The evolution of the disease is stated to be very rapid.

Leclainche and Vallée have made an unpublished observation regarding enzootic necrosis of the lips and nose of French sheep, from which they recovered the necrosis bacillus. The process advanced until in some cases it completely destroyed the lips, making the eating of feed so difficult that some deaths occurred.

Knowles, in 1907, described very fully and accurately a disease occurring among the sheep of southeastern Montana which affected the lips and legs of the animals. He was the first writer to apply the name infectious lip-and-leg ulceration to this disease, which is quite appropriate, owing to the character and location of the lesions. Knowles found the necrosis bacillus to be the cause of the lesions, and succeeded in transferring the disease from infected to healthy sheep by a series of inoculation experiments.

Craig and Bitting, in Bulletin 94 of the Indiana Agricultural Experiment Station (1903), state that young and debilitated lambs when kept under unhygienic conditions are prone to contract the ulcerative form of sore mouth. They claim that

the disease is no doubt due to some of the virulent germs, as it seems to be communicated from one lamb to another.

Law, in 1900, has described, under the term ulcerative stomatitis in lambs, an enzootic affection which he says is manifestly contagious, but the infecting microbe had not then been demonstrated. A number of organisms other than the necrosis bacillus are cited as being formerly supposed to be the cause, but none of these in pure culture produced the disease.

Rushworth, in 1899, reports on aphtha or sore mouth as a very troublesome affection generally seen among sucking lambs, although older sheep sometimes are severely affected by it. Many supposed causes, such as feeding turnips, rape, etc., low vitality, unhealthy surroundings, and in aged sheep decayed teeth, have all been suggested as the cause, but the fact that the udder and teats of the ewe become affected from the lips of the lambs tends to prove its contagious nature, according to Rushworth. Apparently the lambs first become infected and the ewes are then inoculated by their lambs.

Joseph E. Wing, in his "Sheep Farming in America," describes the lamb disease under consideration as a contagious form of sore mouth, which also affects the teats and udders of the ewes. Often the sores along the edges of the lips become so troublesome as to cause the death of the lamb, more usually simply interfering with its thrift so much as sometimes to make it profitless. Wing has found that this disease often breaks out upon the mouths of western range lambs on their arrival at an eastern farm for feeding. He assumes that it is of germ origin, and therefore uses local applications of sheep dips with excellent results.

Walley, as far back as 1888, described an eruptive disease mostly seen in young sheep in England, which he termed malignant aphtha. He writes:

"I am in possession of the most indubitable proofs of the infective and contagious nature of the malady, and all our old ideas as to the disease having simply a

dietetic or local origin must be relegated to that limbo where so many ideas have gone during the last decade."

Sheep breeders and shepherds are quite familiar with this sore-mouth disease of lambs and are prepared to contend with it. Probably this fact has largely tended to mislead them as to the destructive character of the malady under unfavorable conditions, and has thus been the means of materially increasing their losses through the appearance of the more malignant and dangerous forms of this disease.

For instance, in Great Britain, while the sore mouth of lambs has been known and described for more than twenty years, the venereal form was first described in 1903 by Flook. He relates the presence of extensive eruptions about the mouth and nose and a discharge from the sheath in buck lambs. The affected bucks were placed with a small flock of old ewes, and in one week after nine of these ewes showed swelling of the vulva with raw, ulcerating sores on the skin and mucous lining of the lips of the vulva. The bucks showed ulcerating sores in the sheath, and one had eruptive lesions on the upper lip. During the same year McFadyean observed the same disease affecting the vulva of ewes, with the production of swelling, ulceration, and discharge. McFadyean reproduced the disease by collecting the discharge on cotton, which was placed into the sheath of a wether. On the third day a small sore covered by a brownish scab appeared on the skin near the opening of the sheath and continued to spread around the opening. A number of small ulcers formed, covered by brownish crusts. This author did not succeed in isolating any organism which he believed caused the disease, but considers the disease worthy of careful observation, and that newly purchased bucks might well be examined for this affection before being used in breeding. G. H. Williams reported on two more outbreaks of this disease in Great Britain, affecting the genitals of bucks and ewes and similar to those recorded by the two preceding writers. One ewe also showed lesions around the nostrils. In another flock of ewes

he found eruptions about the lips and nostrils only, and it was to this form of the disease that Walley gave the name contagious dermatitis.

CHARACTER AND LESIONS.

It becomes evident, after reviewing the various above-described forms of this disease of sheep in different countries, that



FIG. 1.—Lip-and-leg ulceration, showing lip lesions in ewe infected with germs obtained from warty lips of lamb.

the characteristic lesions may be found on any part of the exterior of sheep where the bacillus which causes it may gain entrance; but cuts, bruises, abrasions, and exposure to devitalizing processes being less frequent upon parts covered with wool and their contact with infection less likely, it follows that the woolly portions of the body are less subject to lesions than other

parts. In this country lesions upon the head, as lips, chin, nose, cheeks, gums, and hard palate, are the most frequent, while much less common are the ulcers on the legs and feet. Shear cuts and the tail stump of docked lambs are at times infected, while slit ears have been more frequently involved. In bucks frequently and in wethers occasionally the sheath is infected. The vulva of ewes has been found ulcerated in a relatively small percentage of cases, while the udder and teats even more rarely have developed the infection, notwithstanding that the sucking lambs showed more or less ulceration and eruptions on the mouth parts. In some cases lesions have appeared in the pharynx and lungs, occasionally in the liver and stomach, and in such instances the disease uniformly results in death.

It may be advisable to arrange these various manifestations of the disease into the following classes, with the statement that further study is required to explain the reason for necrobacillosis in sheep assuming several different forms or types under what appear to be similar environment, as well as for the disease becoming virulently infective in certain cases, while in others, under practically the same conditions, there is a tendency toward latency or even spontaneous recovery.

1. The lip-and-leg form, as the name indicates, attacks the lips or legs, or both. The lesions in some bands are confined very largely to the lips and muzzle, in other bands the lesions are largely confined to the legs, while in still other bands the seat of the lesions is about equally divided between the lips and the legs. This form of the disease is shown in figures 1 and 2.

The different conditions under which the sheep are kept and the character of the feed may account in a degree at least for this difference in the seat of the lesions, and also to some extent for the difference in the spread of the disease, especially within the band. Thus, during the winter, when snow is on the ground and the weather is so cold that the surface of the snow becomes hard and crusted, making grazing very difficult, the chances are that leg lesions would be likely to predominate, owing to the numerous scratches received upon the legs be-

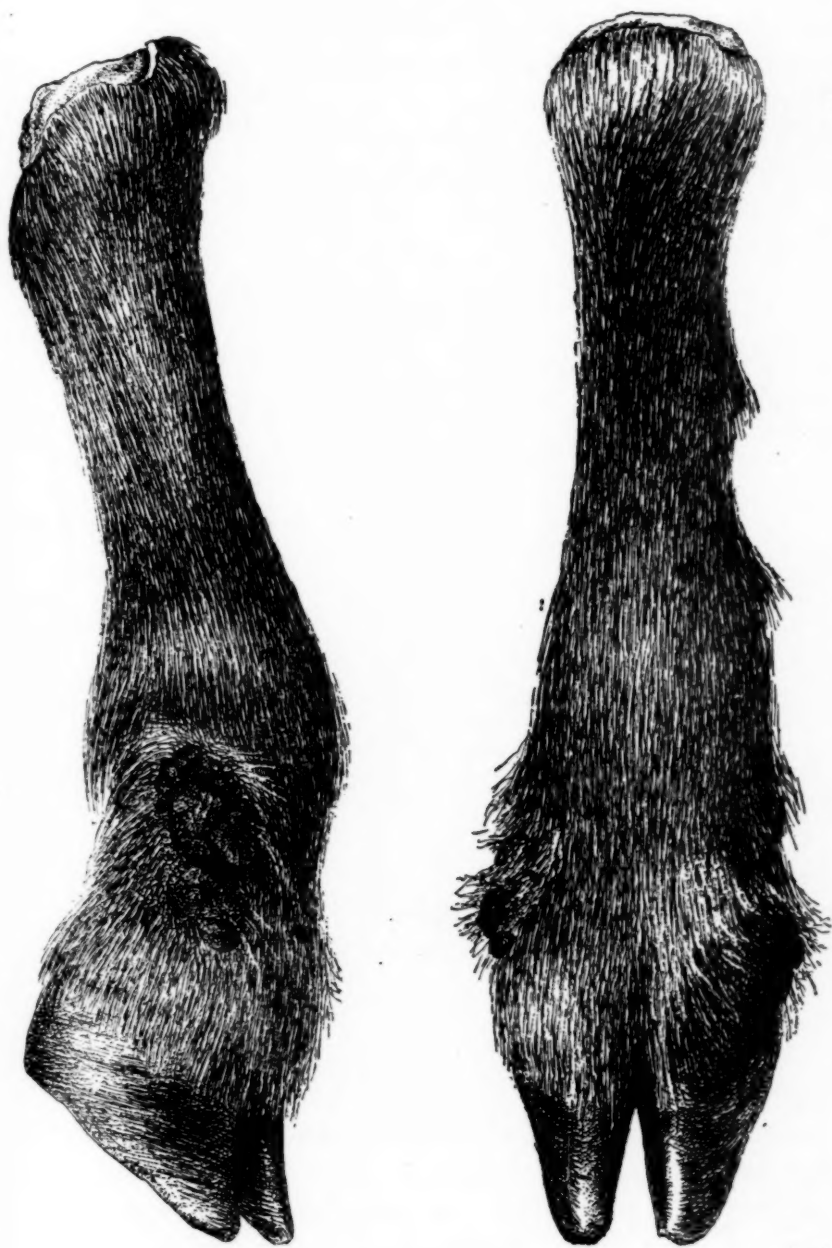


FIG. 2.—Lip-and-leg ulcerations, showing leg lesions.

coming infected with the blood and bits of scab which drop from the infected sheep. On the other hand, if they were fed on a range where cactus and greasewood composed a large part of the feed, the spines of these plants would be likely to wound the lips and nose to such an extent that lip lesions would be apt to predominate. Other sheep ranging over such ground after



FIG. 3.—*Bacillus necrophorus* showing cocoid, bacillary, and filamentous forms.

the infected sheep had passed would under such conditions be very likely to contract the disease.

This form may assume either the active or the inactive stage. The active stage manifests itself in the various locations by inflammation, tumefaction, ulceration, and necrosis, with or without scab formation. There is more or less rapid destruction of the tissue, especially where the lesions are located on the lips or muzzle. Cases are frequently seen where more or less of the lip or the end of the nose has sloughed away as a result of the suppurative inflammation. In such lesions the predominating form of the necrosis bacillus is the long, beaded, vegetative filament located on the border of and penetrating the healthy

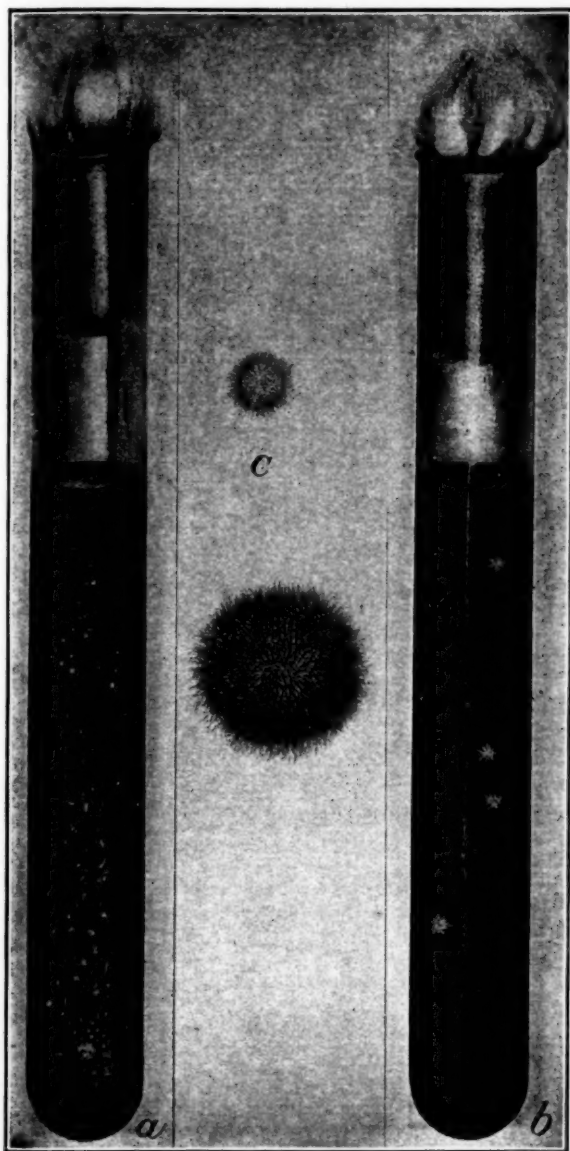


FIG. 4.—Development of colonies of *Bacillus necrophorus* in agar jelly. *a*. Culture showing twenty-four hours' growth, with numerous small gas bubbles; *b*. culture seven days old showing isolated colonies which are characteristic in that their grayish centers are surrounded by fuzzy white areas not unlike the strands of loose, fleecy cotton; *c*, single colonies of the necrosis bacillus showing this filamentous character of their growth (enlarged). (From drawing by W. S. D. Haines.)

tissue. The inactive or chronic stage is characterized by a stationary condition of the lesions, unaccompanied by tumefaction or inflammation except of a productive or proliferative character. In these cases the involution or quiescent forms of this pleomorphic bacillus, especially the bacillary and coccoid types, will be observed in the degenerated débris. The different forms of the bacillus are shown in figure 3 and its cultural characteristics in figure 4.

The lesions in the early stage usually appear as an acute inflammation of the skin on the outside of the lips. This pimple-like formation is attended with much inflammatory swelling, with a decided tendency toward the formation of pustules. They dry and form crusts of a dark grayish color. The growths extend rapidly and become in the course of a few days confluent, forming a large diffused scab, which when removed is found to cover an ulcerative surface. Simultaneously with this the lips become tumefied, swelling to two or three times their normal thickness. The appetite usually remains good, but the animals feed with difficulty, owing to the sensitiveness of the affected parts. In some cases the lesion extends from the lips over the cheeks, occasionally involving the eyelids or even the eye itself. At times a mucopurulent nasal discharge appears, which adheres to the nostrils and together with the swollen condition of the surrounding tissues causes a more or less complete occlusion of the air passages, resulting in labored breathing upon exercise. In some cases the lesions extend into the mouth, producing erosions on the inside of the lips, on the gums, and on the dental pad of the hard palate. These lesions, which are of a spongy consistence and present a warty appearance, are especially noticed on the lambs.

Lesions on the legs may coexist with those on the lips. The sheep at this time will show some lameness, especially if the ulcers appear about the coronet, in the fold of the fetlock, or in the vicinity of a joint. The progress and appearance of the ulcers upon the legs are identical with those upon the lips, and they are soon covered by a thick, dry crust which when forcibly

removed exposes a granulating surface covered with a tenacious pus.

2. The venereal form, as the name indicates, attacks the genital organs of both sexes. This form is frequently seen in connection with the lip-and-leg form, but it is also observed in some bands that do not present any other lesions.

In bucks the external part of the sheath is affected in most instances, and more infrequently the ulcerations are confined to the penis. The latter condition may be explained by the fact that a buck is liable during copulation to scratch or abrade the membrane covering the penis with burrs, etc., in the wool of the ewe, while the sheath may become infected through the use of contaminated bed grounds. In certain sections the erroneous opinion has been held that this form of disease is syphilis or clap, and has nothing to do with lip-and-leg ulceration, because it is rightly considered far worse than the latter. It is probable that this form of the disease, which is also known as ulcerated sheath and big pizzle, results in a larger death rate than all the others, and it was reported that in a number of instances quite a percentage of the band, in some cases the entire band of bucks, were destroyed as soon as the disease was discovered, because so many of the bucks were rendered useless for breeding through a portion of the penis having sloughed off. Besides, this appears to be the most difficult form to treat, yet good results from treatment were obtained in many cases.

In ewes the lesions are located on the skin or mucous membrane of the vulva, on the under side of the tail, and in the perineal region. In a few cases discharges which collected at the lower angle of the vulva and in the wool adjacent to the perineal region indicated the presence of infection in the vagina.

The sheath form of the disease is characterized by an ulcerated condition of the external part of the sheath without the penis being affected, and is not infrequent among wethers. Constant saturation of the wool around the sheath with urine probably chafes the skin, allowing the entrance of bacilli from infected bed grounds, etc. The first manifestations of this form

of the disease are the appearance of one or more very small pale yellow centres within the folds of the sheath at the juncture of the skin with the mucous membrane. Very early there forms at each of these centres an ulcer that extends outward into the skin, but rarely inward. The ulcer or ulcers extend, and frequently coalesce, so that the entire face of the sheath is covered by a single ulcer. During the early stages, in those cases where all or a considerable portion of the face of the sheath is covered with the ulcer, the entire external portion of the sheath will be more or less inflamed and tumefied.

No case of penis infection has been observed in wethers, except a few cases that had been treated by introducing strong caustics within the sheath in contact with the penis.

While this condition has been mostly observed in wethers a year or so old, two cases of natural infection were reported in wether lambs not over four months old. (See Fig. 5.)

3. The foot-rot form: Owing to the dryness of the soil or a large part of the infected section in the West, this disease probably assumes a somewhat different form from the foot rot of moist localities, though foot lesions were frequently seen in connection with the lip-and-leg forms. In several instances quite a number of sheep in the infected districts presented only foot lesions, while in other instances lesions on the feet were accompanied by ulcers on the lips. The foot lesions may first become visible either at the front or back part of the cleft, but usually the erosions make their first appearance at the heel. The inflammation rapidly penetrates beneath the horny tissue, while from the ulcerous opening there exudes a thin, purulent discharge, possessing an odor pungent and disagreeable but at the same time very characteristic. Sex or age does not appear to have any important influence on the susceptibility of the animals, as the disease manifests itself quite generally in a flock, attacking alike male and female, lambs, yearlings, and aged sheep.

4. The sore-mouth form of the disease is characterized by warty or pustular patches on the lips, covered with slightly ele-

vated brown crusts or scabs, usually seen in lambs during the fall of the year, though it has been observed earlier in the season, both in sucking lambs and in those that had just been weaned (Fig. 5).

The disease makes its appearance very quickly, the lips becoming more or less tumefied, with a slight diminution of the appetite, especially in severe cases. In some instances food is



FIG. 5.—Lamb with lesions on lips and sheath. (Photograph by Dr. W. E. Howe.)

taken with difficulty, resulting in unmistakable signs of poor nutrition and the stunting of the animal. At this stage the animal presents a greater or less number of nodules or patches on the lips, most frequently at the junction of the mucous membrane and the hairy portion. In severe cases these nodules become confluent, forming large, diffuse, fissured scabs around the margin of both lips, down on the chin, or up on the nose,

or both, in which case the whole muzzle is affected. The removal of these scabs exposes either a purplish-red, easily breeding surface, or a pitted, yellowish-white ulcer covered with pus, some of which will also be found attached to the under surface of the removed crust. In very extensive lesions there may be sufficient pus that a small quantity will exude from beneath the crust on pressure. In a few cases the disease spreads to the mucous membrane of the mouth, forming small ulcers of fungoid elevations, soft, red, and of a spongy consistence. In both corners of the mouth there are usually present small yellowish necrotic areas which are generally the last to heal. A typical, offensive odor, similar to that of Limburg cheese, is given off from the infected parts.

In some of the most extensive cases of this form there is a loss of tissue due to ulceration, resembling that seen in the lip-and-leg form. In these lesions the active, vegetative filaments will be found penetrating the healthy tissue. In unmolested cases, except probably the more extensive of this form of the disease, the crusts remain intact until the lesions are fully healed, when they drop off, leaving a clean, healthy looking surface. In such lesions the quiescent coccoid and bacillary forms of the bacillus will predominate, while only an occasional short filament will be observed.

We have positive proof of numerous cases of the malignant type of lip-and-leg ulceration developing from the lesions in sore-mouth lambs, convincing alike to the flock master and to the inspectors who had supervision over the animals.^a

(To be concluded in June issue.)

^a The writer acknowledges his indebtedness to the veterinary inspectors of the Bureau of Animal Industry who have submitted reports on lip-and-leg ulceration, especially to Drs. John S. Buckley, George A. Johnson and Charles H. Zink.

THE CASTRATION OF CRYPTORCHIDS.*

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It is generally considered advisable to castrate all male domestic animals which are to be regularly used for work or as human food. However true this may be of normal males, it is emphasized in most cases of cryptorchids or hidden testes.

It is especially desirable that the cryptorchid, or the monorchid, be castrated, in order that he may not be used for breeding purposes, because he may largely transmit the defect to his offspring. In addition to this, the abdominal testicle usually induces a perverted sexual desire, closely analogous to the nymphomania of the female.

The causes of cryptorchidism are various, and are not wholly understood. We meet with three groups of causes or conditions which are of interest:

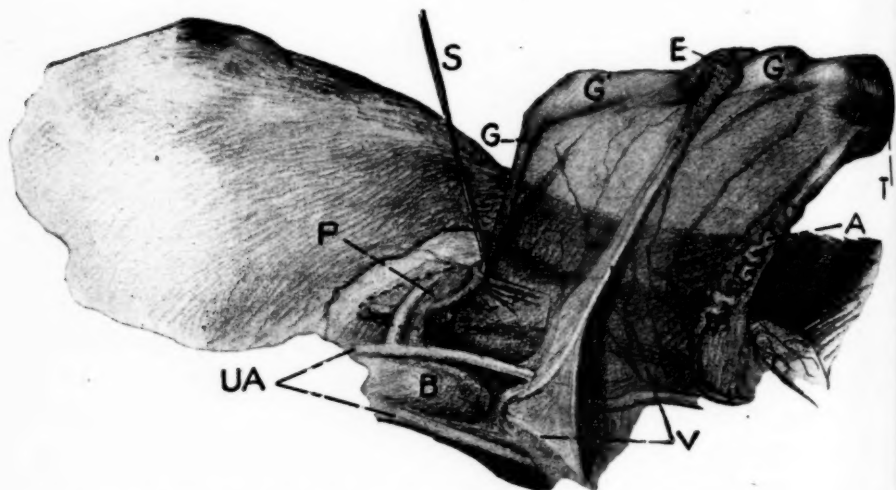
1. Arrested development, or interrupted descent of the organ.
2. Aberration of the development of the organ teratoma.
3. Pathologic condition of the testes.

In the first case, the testicle forms normally, and drops from its embryonic location into the peritoneal cavity, but fails to descend into the scrotum. It then retains its fetal character, is small, soft, flaccid and histologically shows the fetal spermatoblasts, but no spermatozoa. The gland is therefore without procreative function, but induces often a sexual mania. Its position varies, the gland being located at any point on the line passing from the embryonic seat, near the posterior end of the kidney, to and into the internal inguinal ring.

The second class, the teratoma, comprise a widely varying

* Presented at the annual meeting of the North Dakota Veterinary Association, Fargo, January 18, 1910.

group of dermoid cysts, of almost any dimensions and containing epidermal debris and structures, such as hair, dental tissues, etc. They are highly interesting, because they suggest that the sexual



FETAL TESTICLE AND ITS ATTACHMENTS ILLUSTRATING THE ATTACHMENTS AND RELATIONS OF A TYPICAL CRYPTORCHID TESTICLE, AS AFFECTING THE PROBLEM OF CASTRATION.

P. Processus vaginalis, the outlines of which are indicated by a dotted line. S. Curved sound introduced through the slit-like internal inguinal ring, into the processus vaginalis.

As described in the text, the operator may grasp this processus vaginalis between the thumb and finger tips, and feel the gubernaculum testis, G, or the second portion of this structure, G', or the tail of the epididymis, E, or the vas deferens, V, may lie within the processus vaginalis where it may be grasped without rupturing the peritoneum or inserting any portion of the hand into the abdominal cavity.

Or should the operator fail to thus grasp either of these structures, as soon as the peritoneum is ruptured through, or near by, the internal inguinal ring, and a finger is inserted, the structure, G, G', is to be recognized, fixed in the posterior angle of the ring and near by are the epididymis, E, and the vas deferens, V, just beyond which, and continuous therewith is the testicle, T.

The other structures indicated are, A, Artery of the testicle. B, Urinary bladder. UA, Umbilical arteries.

glands are really of epiblastic origin, as contended by some embryologists, instead of mesoblastic, as asserted by most authors.

The third group comprises very variable pathologic changes, such as cystic, calcareous or other forms of degeneration, malignant new growths, etc.

These three groups are very unequal in size, though definite data are wanting.

Ninety-one cases have been operated upon in our clinic, of which ninety belonged to the first group, none to the second, and one to the third.

In private practice we have met with one additional case of pathologic testicle, but no teratoma.

The teratoma are considered so mysterious that they are largely recorded, and probably an exaggerated idea of their prevalence is acquired.

It is highly important that these classes be kept in mind, since they have an essential bearing upon the surgical procedure in castration.

Other less essential elements entering into the surgical problem of cryptorchidism are whether the testicle is abdominal or inguinal in location, and to what species the animal belongs.

Cryptorchid castration, like many surgical procedures, was at first chiefly empirical in character, and in fact is still largely practiced as an empirical operation, the operation being largely taught and learned in a manner devoid of scientific knowledge.

The preparation of an animal for the cryptorchid operation does not differ materially from the general rule for other abdominal operations. We desire that the patient shall be in prime physical condition, having had abundant exercise or work to place him in good, vigorous health. Before the operation, the alimentary tract should be emptied either by restricted diet or by hypodermic catharsis. Fullness of the alimentary tract should be obviated for general surgical reasons and for the special purpose of facilitating the operation, by affording greater intra-abdominal room and preventing prolapse of abdominal viscera through the wound.

The securing of the patient, in case of the horse, needs be either in dorsal recumbency, or in the lateral position, with that side upon which the hidden testicle is located, uppermost. There is but one essential detail in securing the horse; the thigh on the side of the hidden testicle must be fully abducted. This may

be effectively accomplished by many methods of casting, and may be perfectly attained upon some types of operating table.

If the thigh is not completely abducted, the operator may find his hand so compressed that it is soon fatigued and disabled, and the operator confused and lost. It is a great error to attempt the operation except this abduction is complete and secure. Should the apparatus slip during the operation, and the operator's hand become compressed, it is liable to greatly confuse even an experienced surgeon.

The question of general anæsthesia is one upon which operators may justly differ. For the beginner, it is the best way. The beginner may, under proper aseptic precautions, manipulate an anæsthetized cryptorchid for half an hour or an hour, without serious harm to the patient, and without seriously transgressing the general sentiment of humanity for animals, which is developing so rapidly amongst our people.

It is also highly important for the experienced operator. The inguinal region needs to be kept as freely open and the tissues as passive as possible, and this can only be attained by general anæsthesia.

When the beginner is working upon an anæsthetized patient, he is relieved from the disturbances of change in position and the shifting in the relations of parts. The abdominal viscera are not forcibly pushed against his hand or through the opening. It is of great importance also that the beginner should be relieved, through the general anæsthesia of his patient, from the confusing and enervating mental anxiety caused by the pain he is otherwise inflicting upon the patient, as expressed by violent struggling, sweating, groaning, etc.

Again, general anæsthesia is always best, even for the experienced operator in all cases of complications, and the surgeon rarely knows that a case is complicated until deeply in the operation, where he cannot retreat or readily modify his plans. We believe in general anæsthesia in all cases.

Some advise rectal exploration prior to securing the patient for operation. The procedure has certain value.

In those cases of monorchidy where the scrotal testicle has been removed (a very unfortunate and inadvisable procedure), the operator may determine definitely upon which side the hidden testicle is located. It may further give him important information as to whether the retained gland falls within our first, second, or third class. Should it belong to the second or third class, the examination reveals to the operator the nature of the conditions, forewarns him of the obstacles to be overcome, and enables him to plan his operation.

On the whole, rectal exploration prior to operation is largely impracticable. It is generally inconvenient to make such examination until immediately prior to the operation, and at that time it is on the whole imprudent because of the difficulty of cleansing the hands properly after they have been soiled by the feces.

Another point of very great importance is the question of disinfection of the operative area, and the maintenance of asepsis. The problem is somewhat alike, whether the incision be made in the scrotal, inguinal, prepubian or flank region. In the horse, the incision is usually made in the scrotal or inguinal region, while in other animals it is best made in the upper flank. While the skin of the scrotal and inguinal regions is very thin, soft, and usually almost hairless, it is nevertheless thickly covered with sebum, which is very insoluble and difficult to remove. Washing for a few minutes with any ordinary antiseptic, even though preceded by soap and warm water, is of scant, if any value. The problem of the practical disinfection of this region has not been solved. The profuse application of alcoholic or ethereal solutions excoriate the delicate skin.

Careful investigations need be made toward solving this problem. Possibly a good method would be to wash the parts thoroughly an hour or two prior to the operation, with soap and hot water, perhaps mixed with kerosene in emulsion, or with lysol, bacterol, or carbolic acid. The sheath being always dirty bacteriologically, the smegma from this should be carefully cleared away, and the sheath and prepuce might be anointed with an antiseptic oil, glycerine or vaseline. The skin having been allowed

to dry completely, when the patient is secured for the operation, the operative area may be liberally covered with tincture of iodine, and allowed to dry before making the incision. After the skin incision has been made, additional security might be attained by again applying the tincture of iodine to the margins of the cutaneous wound.

Some operators make their incision through the skin and dartos in the scrotal region, parallel to the median raphe and one to two inches laterally therefrom. Others make their incision directly over the external inguinal ring and in the same direction. By the first method, the operator inserts his hand through the wound in the skin and dartos, divides the loose areolar connective tissue and pushes aside the numerous vessels, in an upward and outward direction until he reaches the external inguinal ring immediately at that point at which the second operator would make his incision.

The incision over the external ring is therefore more direct and the resulting wound less extensive, in which respect it is more conservative and preferable. The scrotal incision has the important advantage over the inguinal, in that the inevitable movements of the thigh after the operation disturb the cutaneous wound over the inguinal ring, but do not seriously involve the scrotal wound. We prefer the scrotal incision.

Having reached the loose areolar tissue in the external abdominal ring, whether indirectly through a scrotal incision or directly through an inguinal wound, the operator, with his fingers in the form of a cone, and by means of a rotary motion, pushes the areolar tissues aside and cautiously advances his hand upwards, outwards and slightly forwards toward the internal inguinal ring, or the position which it should occupy. Care should be taken to note here the presence or absence of a distinguishable gubernaculum testis, of the epididymis or of the testicle itself.

If a recognizable gubernaculum is present, it may be an important guide to the internal ring, and hence an aid of value to the operator, especially to the beginner; or the operator, by grasping this and drawing upon it, may bring the testicle out through

the ring and grasp it. Usually the presence or absence of this structure in a recognizable form may be suspected by the presence or absence of a distinct dimple or depression at the fundus of the scrotum.

When the epididymis has descended into the scrotum, it is recognized as a somewhat firm cord about the size of a man's finger, and is well nigh indistinguishable from the stump of the spermatic cord following castration. It is more free from adhesions to surrounding tissues, and its obtuse extremity is connected with the skin and dartos only by the indistinct gubernaculum. Cutting through the peritoneal sheath of the cord, the operator exposes the vas deferens and tail of the epididymis firmly attached, naturally, not by adhesions, at the distal end of the tubular cord. By exerting traction upon the tail of the epididymis, the head of that organ may be brought into view, the entire epididymis being abnormally elongated and attenuated. The testicle itself remains firmly lodged above the internal ring, or incarcerated in it, and, however much traction may be exerted on the epididymis, the gland usually remains immovably fixed.

The first case of this kind with which we met led us into error, and we removed the epididymis and a portion of the vas deferens, while we left the testicle in the abdomen. Later in our clinic we operated upon a case, the history of which could not be traced, but which had evidently been operated upon by some one who had fallen into the same error, removing the epididymis and leaving the testicle.

The condition offers some difficulty to overcome. The most direct method is to freely incise the peritoneal sheath down to the internal ring and either dilate this by forcing a finger through the ring along side of the vas deferens and epididymis, or by cautiously incising the ring with a scalpel or bistoury. The testicle may then be withdrawn and removed.

If the testicle itself is encountered in this region (inguinal cryptorchid) the gland is to be seized and forcibly brought out through the wound. Having passed through the internal ring,

the gland is covered by the cremasteric fascia or tendon and by the parietal peritoneum, which are to be incised as soon as brought to view, and the testicle laid bare. It is to be noted that in all cases of abdominal cryptorchidy, including those we have mentioned where the epididymis has descended into the scrotum, the testicle, when brought out, is naked; while in inguinal cryptorchidy, the testicle is inevitably brought out covered by the cremasteric structures and the parietal peritoneum.

Encountering neither gubernaculum, epididymis or testicle in the inguinal region, the operator should search for and locate the internal abdominal ring, whether he designs to penetrate it or not, as it constitutes the immediate, logical guide to the location of the testicle.

The internal inguinal ring may usually be recognized in the cryptorchid horse, as an elliptical slit, appearing to the touch as about $\frac{3}{4}$ to $1\frac{1}{4}$ inches long by $\frac{1}{2}$ inch wide, directed obliquely forward and outward in its greater diameter. It is covered by a thin layer of peritoneum, while its margins, the borders of the great and small oblique muscles are distinguished by their greater thickness and firmness. This ring is located 2 to 4 inches upward, outward and slightly forward from the external abdominal ring. It is just opposite and very near to the crural ring, and, by palpating outward against the thigh, the operator easily recognizes the pulsating femoral artery as it emerges from the crural ring.

In some cases the internal ring is unrecognizable by palpation, but the determination of its approximate location is nevertheless essential to scientific cryptorchid castration. The recognition of the ring is especially difficult in animals previously operated upon unsuccessfully, and followed by the formation of a large amount of dense, cicatricial tissue. When the ring has been recognized, if the operator will approximate his thumb, index, and second fingers to constitute an incomplete circle of 1 to 2 inches in diameter and press the ends of the digits against the abdominal muscles about the margins of the ring, the peritoneal curtain closing the ring, the processus vaginalis, tends to push

outward in the form of an obtuse cone, while enclosed within it are the gubernaculum and usually the tail of the epididymis and the base of the vas deferens. The gubernaculum, in its intra-abdominal position, is recognized as a somewhat distinct, firm, straight cord, about one-eighth of an inch in diameter, somewhat movable within the peritoneum. The two latter are recognizable as hard dense, coiled cords or filaments, which are readily grasped between the thumb and fingers, and clearly recognized by palpation.

These facts we have found of the greatest importance in the clinical teaching of the operation. It is the keynote in our method of instruction. We advance the operation to this point, seize the processus vaginalis enclosing the gubernaculum, the vas deferens or the tail of the epididymis between the thumb and fingers, introduce a long pair of forceps, and seize the gubernaculum, epididymis or vas deferens, still covered by the peritoneum. We then secure the forceps in this position, with the desired structure firmly caught, and the beginner introduces his hand, palpates all the parts, ruptures the peritoneum, grasps the gubernaculum, and then the vas deferens, followed by the epididymis, and completes the operation.

Reaching and recognizing the internal ring, operators divide themselves into two or more groups in their further procedure.

We recommend in those cases we have just mentioned, in which the operator can grasp the vas deferens or epididymis outside the ring in the processus vaginalis, still covered by the peritoneum, that the peritoneal covering be ruptured by dragging upon it the tail of the epididymis grasped and drawn out, and the testicle itself brought out by traction upon the epididymis, thus completing the operation without the insertion of the hand or even of a finger into the abdominal cavity. In some cases the testicle may not be drawn through the narrow ring by traction alone, in which instances we insert an index finger, dilate the ring, and, exerting traction on the epididymis with the other hand, guide the gland through the ring with the introduced finger.

Should we be unable to grasp the epididymis outside the ring, we penetrate the ring with an index finger, and, directing it backward, hook the index finger over the gubernaculum as it leaves the posterior margin of the ring, to immediately lose itself in the tail of the epididymis. This is grasped, drawn through the ring, and the operation then proceeds as before.

Should the operator fail to locate the ring, he needs at least to determine its approximate location, penetrate the muscular wall as near to the normal position of the ring as he can determine with his index finger, and, palpating the surface of the peritoneum, locate and grasp the gubernaculum, and eventually the vas deferens or epididymis.

Theoretically, should the operator fail to locate the testicle by this plan, he should next introduce the entire hand into the peritoneal cavity, again search for the gubernaculum, the epididymis, and especially for the gland itself, and as a final resort search for the vas deferens above the urethra and trace it back to the gland.

Practically, when an operator must insert his entire hand into the abdominal cavity in his search for the testicle, it is the operator and not the testicle which is lost, with often a far too poor prospect of finding himself and recognizing the definitely located and attached organ.

Too many operators, and especially beginners, search for and attempt to identify the testicle without considering the relations to the gland of the gubernaculum and vas deferens. Searching independently of these for the gland is like a shore fisherman on a dark night, who has securely hooked and landed a fish in the darkness and starts groping about to find it, instead of following his pole to the line, and thence along the line to the hook, where the fish is definitely fixed and located. So, in castrating a cryptorchid, the testicle need not be "found" in the most common meaning of the word, because it is not "lost," but the epididymis and vas deferens are definitely and closely moored at the posterior commissure of the internal ring by the gubernaculum and at the proximal end of the epididymis, securely fixed, is the gland itself.

Going back to the course of the operation, when the operator has reached the internal ring or its immediate vicinity, many operators diverge from the technic we have recommended.

Instead of penetrating the ring, they push somewhat upward and forward, and penetrate the fascia of the small oblique muscle. By this plan, the insertion of at least one finger in the abdominal cavity is necessitated, which, by the direct method we have suggested, may be obviated. Beyond this, the operation is identical.

It is, we believe, erroneously contended by the advocates of this plan that prolapse of the abdominal viscera is thereby obviated. The only cases of visceral prolapse from cryptorchid castration observed in our clinic have been patients operated upon by experienced castrators who were uncompromising devotees to this plan, and applied the technic in their operations.

In the ordinary cryptorchid castration, where the testicle is small and flaccid, and where it is drawn through the ring by traction on the vas deferens and epididymis or the withdrawal is supplemented by the very slight dilation of the ring by the insertion of one finger, the danger from visceral prolapse is very remote indeed. We have not observed the accident under these conditions.

If the entire hand is forced through the ring, admittedly there is danger of prolapse. If the entire hand is forced through the fascia of the small oblique above and anterior to the internal ring or elsewhere in the vicinity, the inevitable rent will pass down and involve or pass alongside the ring and produce a tear essentially identical with that caused by forcing the hand directly through the ring.

Should the testicle fall within the second or third class we have mentioned, and be greatly enlarged, so that it must be removed entire, it matters little whether the internal ring is enlarged to permit its escape or the same sized opening is made in close proximity to the ring. There results a great rent through which viscera prolapse is highly probable. Should the operator know in advance that he has a testicle of extraordinary size to deal with, he should abandon the inguinal route and choose the

upper flank as the safer and better. Indeed, under modern surgical technic, the flank operation is in any case quite as safe as the inguinal, whenever the operator inserts his hand into the peritoneal cavity.

Should the testicle be in a pathologic state, and adherent to the intestines or other viscera, the flank operation is advisable or even necessary. In the one pathologic testicle removed in our clinics, the patient being a pig, the testicle was firmly adherent to two loops of small intestine. It was necessary to draw these out with the gland and dissect them away.

In other animals than the horse, we constantly prefer the flank operation, except we can recognize the epididymis in the inguinal region, and draw the gland out by traction.

For the flank operation, the patient is secured in lateral recumbency with the head end inclined, the flank shaved and disinfected, and an incision is made as for flank spaying, of a size to admit one finger or the entire hand, according to the conditions.

In small pigs and dogs and cats, we have found the small wound sufficient. In large boars we have been forced to make the opening large enough to admit the hand.

Inserting the index finger or, the entire hand, the operator frequently recognizes the gland at once, lying just by the incision. Otherwise he reaches the inguinal ring, grasps the gubernaculum, glides along it to the epididymis, and thence to the testicle.

In cases of double cryptorchidism in small animals, both testes may be removed through one incision, or, having opened the wrong flank when but one gland is retained, he may still complete his operation through the erroneous incision. He merely needs pass his index finger or his hand along the floor of the abdomen, across to the opposite inguinal ring, grasp the gland, draw it across to the other side and out through the incision.

So, in the cryptorchid horse, if he is a double cryptorchid and the operator has inserted his entire hand in order to secure the first testicle, he should not make a second wound, but reach across between the viscera and abdominal floor, seize the second testicle

and remove it through the first wound. Likewise, in operating upon a horse with one abdominal testicle, where the scrotal testicle has been removed, and the operator errs by cutting in upon the wrong side and has inserted his hand into the peritoneal cavity, he should not make a second wound, but remove the testicle through the wound already made.

After a cryptorchid testicle has been withdrawn from the abdomen, the method of severing the cord is usually a minor matter. In our first class, which includes probably 99 per cent. of the cases, and in which the gland has been arrested in its development, it is comparatively non-vascular and does not bleed.

The completion of the operation may vary. In the flank operation, the abdominal wound is naturally sutured. If the inguinal operation has been cleanly accomplished with unimportant laceration of tissues and without danger of visceral prolapse, it may well be sutured. If there is danger of visceral prolapse or of serious infection, antiseptic tampons should be inserted up to the internal ring, and held in position by sutures.

By means of large tampons, an enormous rent in the abdominal floor may be successfully closed, and prolapse obviated. In large rents, the safest way to tamponade is to take a broad and ample piece of cheesecloth, and spread it with its center over the wound. Then take masses of convenient size of gauze, cheesecloth or cotton, boiled, immersed in a disinfectant and pressed dry, and push them into the internal ring, inside the sheet of cheesecloth. No matter should it extend a few inches into the abdomen, it cannot escape. When the wound is well filled, the tampon is secured in place by scrotal sutures.

After twenty-four to forty-eight hours the sutures are to be removed, the packing inside the sheet of cheesecloth cautiously withdrawn, followed by the sheet of cheesecloth itself.

Blood clots are then to be mopped out with antiseptic gauze, and, if deemed advisable, a new smaller tampon inserted for another day.

According to the degree of infection, the wound may be let alone or mopped out daily with swabs of antiseptic gauze, prefer-

ably saturated with tincture of iodine. The inguinal wound should not be irrigated, lest the antiseptic be forced into the peritoneal cavity.

Should fever arise, and not be promptly relieved by local handling of the wound, we recommend large doses of quinine or potassium iodide, usually preferring the former. To a medium-sized horse we give 1 to 3 ounces of quinine daily until the fever yields or toxic effects, such as trembling or diarrhoea appear, when we change to potassium iodide.

The mortality in cryptorchid castration is not well known. In the ninety-one cases in our clinic there were included 28 pigs, 1 dog, and 1 cat, among which there were no losses.

Of the 61 horses, 56, or 92 per cent., recovered, and 5, or 8 per cent., died. These losses are abnormally high. Four of the five cases succumbed to infection.

In the earlier years of our clinic, the operations were essentially all by students. In many cases six to ten different students each inserted his hand into the inguinal wound and palpated the parts. Three of the fatal infections resulted from this practice.

This plan was then abandoned, since which but one fatality has occurred from infection, following the operation by a member of the staff.

In our clinic we have had another obstacle to meet. The late Professor Williams, of Edinburgh, wrote more than a quarter of a century ago advising against the castration of horses when the wind was from the east, and to avoid operating in any kind of weather in the neighborhood of a veterinary college.

Whatever may be the effect of an east wind in England, the dangers of operating in a veterinary college are not to be ignored. Prior to the days of antiseptic and aseptic surgery, surgical operations on man in a hospital were followed by appalling mortality, but the mortality from wound infections in hospitals for man have been very largely overcome.

Veterinary surgery offers a different problem, especially in the horse, and the details of efficient asepsis and antisepsis in veterinary hospitals is not yet satisfactory. A prime difficulty

in our work is cheapness in the construction and equipment of our veterinary hospitals, with limited opportunity for efficient disinfection.

From the beginning of our clinic in 1896 up to a recent date, we have noted an increased tendency toward serious infections, from the opening of the clinic in the autumn to its close in June. The hospital and operating room were then vacant and open for the summer months. In other words, the presence in the hospital and in the operating room of cases of fistulous withers, poll evil and other chronic, profusely suppurating maladies so befouled the establishment that virulent infection abounded. Our cryptorchid castrations came almost wholly toward the close of our school year, when infection of our hospital had apparently reached its highest virulence. This we have fought so energetically that we now believe we can perform most operations in our hospital with greater safety than outside, and believe we can castrate as safely as anywhere. Neither do we observe increased infection as the year advances. In fact, we last year extended our clinic to cover the entire year, and are still able to keep wound infection under satisfactory control.

Aside from the disinfection of the instruments and of the hands, arms and clothing of the operator, there are other neglected sources of infection which the veterinarian should recognize.

Our casting apparatus constitutes a highly dangerous bearer of virulent infections, and the body surface of the animal, with its massive coat of hair, which it is perhaps shedding, affords ample opportunity for the entrance of infection into the wounds. We should devise better means for obviating these.

Aside from infection, the mortality from cryptorchid castration is well nigh negligible. Of course, casting accidents may occur, and some losses have taken place from intestinal prolapse. The latter can, and should, always be obviated.

Among our five deaths, one was due to an accident based upon an error. We opened the patient on the wrong side, recognized the vas deferens of the testicle which had been removed,

but, before we were aware, had made a rent in its peritoneal fold. We reached across to the opposite side, grasped the testicle and removed it through the wound. A loop of the small intestine dropped through the peritoneal rent behind the vas deferens of the testicle which had been removed at a prior date, the intestine became strangulated and the patient succumbed. Had such a result been anticipated or thought of as a possibility all danger could have been obviated, after the rent had been made, by rupturing the vas deferens, thus leaving no place for the incarceration of the viscera.

So with other complications which may arise. The operator should preserve his equanimity, and, in cases of error or unexpected complications, promptly and coolly meet the conditions. To this end, the operator needs be fully prepared for emergencies, have the surroundings in all essentials suitable, have abundant help at hand, and, beyond all else, needs be in good physical condition, free from fatigue of body or mind.

In the one fatal error we have recorded, the difficulty was largely referable to the fact that the writer was ill, and should, by all rules of professional action, have been in bed instead of at the operating table. Good surgical work requires vigor of both mind and body, and we are forced to see this if we undertake an operation when we are unfit, and then meet with complications.

THE alumni dinner of the New York-American Veterinary College, held in New York City on April 20, was a most enjoyable one. The menu surpassed all previous ones was the unanimous opinion of the more than eighty gentlemen who partook of the good things served. An idea of the mental feast may be had when we find among the list of speakers Prof. F. C. Minckler, of Rutgers College; Hon. John T. Coughlin, Mayor of Fall River, Mass.; Thos. F. Freel, Esq., Supt. A. S. P. C. A., New York City. Many other gentlemen spoke, including President Hollingworth, of the New York State Veterinary Medical Society. The most conclusive proof of the success of the occasion rests in the fact that Dr. W. Horace Hoskins, Philadelphia, acted as toastmaster.

CONTROL OF TUBERCULOSIS THROUGH EXISTING LAWS.

ADDRESS DELIVERED BY DR. J. F. DEVINE, CHIEF VETERINARIAN NEW YORK STATE DEPARTMENT OF AGRICULTURE, AT THE THIRTY-THIRD MEETING OF THE STATE DAIRYMEN'S ASSOCIATION, HELD AT WATERTOWN, N. Y., DECEMBER 15, 1909.

Mr. President, Ladies and Gentlemen—If the subject "Control of Tuberculosis Through Existing Laws" is one of little or no interest to you, I wish to place the blame where it belongs, as I had nothing to do with the selection of the subject, neither did I know that I was to have the pleasure of addressing your meeting until I received the copy of the program.

The question of tuberculosis, I understand, has been well discussed in your organization many times and as to my explanation of the existing laws, I must offer apologies as I have no legal training and therefore the blame should rest upon the congenial secretary, who has been receiving all praise and no censure up to this time.

In taking up this subject I shall confine my remarks on tuberculosis to the smallest possible sphere that will connect the nature of the disease and the laws for its control. It would be useless to go into detail before such a representative body of educated dairymen as to the cause and characteristics of this disease. Suffice it to say in a hurried way that tuberculosis is known and accepted to be a specific disease caused by the tuberculosis bacterium, first described by Dr. Robert Koch, of Germany, in 1882.

Tuberculosis is also a communicable disease, but it differs from many of the ordinary *specific* and *communicable* diseases in many ways. For instance the period of incubation (by that we mean the time which elapses when an individual or an animal is exposed to a disease to the time when the symptoms of such disease make their appearance). As you all know, most specific diseases have a somewhat definite period of incubation, and if

one of your children were to visit your neighbors or your relatives where some one in that family was sick with diphtheria or scarlet fever and you appealed to your family physician, he could tell you with reasonable certainty how long it would be before your child would come down with the disease or how long time would need to elapse before the danger of coming down with the disease would be passed. He could not tell you that if your child had been exposed to tuberculosis. The tubercular germ, like many other germs of specific diseases has a wide variance in virulency (strength) some of the germs being so mild that they would scarcely cause disease in any individual or animal, and again others are so virulent that if present in great numbers they would cause disease in most any individual or animal, unless such individual or animal be endowed with what is known as natural immunity.

Again tuberculosis differs from other specific diseases in that it does not run a definite course. We all know that if a child were affected with scarlet fever or diphtheria, that the disease would be likely to pass through its various stages in about so many days, and again your family physician could advise you as to about the time of the crisis, when the disease would then either terminate fatality or convalescence begin. Not so with tuberculosis. The duration of the disease would depend upon the virulency of the infecting germ, the location of the infection and the resistance or vitality of the person or animal affected. The resisting forces, leaving aside natural resistance, would be influenced greatly by the environments in which the person or animal lived; good food, fresh air, sunlight and proper exercise being conducive to good health and resisting qualities. Again good air and sunlight weaken the germ; in fact kill it, if exposed long enough and so indirectly assist the animal's resistance.

Tuberculosis differs in another important way from these diseases and in a manner that is of particular interest to the stockman, in that if an individual affected with the ordinary specific disease survives that disease, and returns to health without any of the sequels that sometimes follow such diseases, the body is

restored to as normal a condition as ever. This is not so when a body is once seriously infected with tuberculosis. Tuberculosis is a parasitic disease. The bacteria do not produce these effects by secreting a poisonous substance known as toxine which circulates through the body causing acute poisoning in the same sense as does the diphtheritic or tetanus bacillus, but the bacteria of tuberculosis divide by a process known as fission, one bacterium becoming depressed in the center like a sausage link, so to speak, this dividing into two and these again dividing into four and so on, and living as parasites upon the organs in which they are located, eating away with more or less rapidity, depending upon the virulency of the bacteria and the amount of resistance or lack of resistance of the tissue upon which they are living; in other words, depending upon the strength of the germ as well as the strength of the animal body in which they are living. If these organisms progress in their work the parts or organs in which they are located either become hard and possibly swollen, destroying their function (usefulness) or break down and form abscesses, or there may be a gradual waste, as is the case with tuberculosis of the lungs where the lung tissue is broken down and thrown out by expectoration. The saying that a tuberculous individual sometimes has but one lung or part of a lung is more literal than is ordinarily supposed; since it is oftentimes so that the sufferer's lung has actually been broken down and coughed away. Therefore the arresting of tuberculosis is not as secure as that of most other diseases. These bacteria may remain in a dormant or semi-dormant condition for an indefinite period, or the affected area may become encapsulated by lime salt deposits or bands of fibrous tissue, nature's way of healing, and at any time that the system might be weakened in any way, perhaps by another disease, these lesions light up anew and the disease make rapid progress and oftentimes causing death from acute tuberculosis. How long the germ might lie dormant in an infected area without causing the disease to progress or without dying we do not know definitely at the present time. This, like many other things concerning the control of this

disease we hope to gain more and more knowledge on each year. However, we do know at this time that it is possible for an animal to become infected as a calf, due to exposure in an infected herd or drinking milk containing tuberculosis bacteria and show no evidence of the disease until maturity is reached or when the strain of the maternal functions and lacteal production, or confinement in a dark, dirty, unventilated stable lessen the resisting forces of the body. Any veterinarian who has had experience in a dairy district knows that this is particularly true in herds that are kept with the sole intent of milk production in close quarters and are heavily fed; and it is not an uncommon thing to find the choicest animal in such a herd doing well and looking healthy in every respect, not exhibiting the slightest symptom to cause even a suspicion of tuberculosis infection; and still, let this very animal become stricken with some slight ailment or perhaps have a little difficulty at parturition or retention of the membranes and with the most conscientious and proper treatment the animal will gradually lose flesh. Do what we may, she succumbs, and post-mortem examination reveals tubercular lesions characteristic of such an illness and death. The fact is forced upon us that while we have been treating and trying to abort the progress of some other ailment, tuberculosis has been undermining the vitality of the animal and death results. Therefore applying this knowledge to our dairies, we maintain that an animal that is once known to be tubercular is unsafe to mingle with a healthy herd or animal, because even though the lesions may be very slight and of such a character that with open air treatment and no great strain on the system, the lesions might become healed and stay healed forever under such favorable conditions. This is not practical with our present methods of dairying. We know the dairy cow is kept for her milk flow or for her reproductive qualities or both, and without such she would not be much of a dairy cow. We also know that the heavier she is fed and milked the heavier the strain on the system, and it is an unfortunate fact that these animals succumb to the disease much quicker than the non-productive animal, and I believe that it is established to

the satisfaction of all who have given this question much attention that bovine susceptibility to tuberculosis is almost alarming and that in order to ever rid our dairy herds of tuberculosis it is almost imperative that we guard against close cohabitation of the healthy with the diseased as well as the possibility of any infected matter, milk or other substances being taken into the system by the digestive tract. The feeding to calves of unpasteurized skimmed milk from creameries accepting milk from miscellaneous herds is one of the curses of our dairy industries of to-day.

Knowing this much of the characteristics of the disease, the next thing that interests us is how can we know when an animal is tuberculous. The two methods best understood to-day are the physical examination and tuberculin test: Unfortunately the physical examination cannot be relied on alone in the greater percentage of cases. Some of the symptoms that we might find in clinical cases would be an unthrifty look, perhaps a short deep cough or possibly diarrhoea and a temperature denoting febrile conditions. The temperature might be moderate or might be high. Again if the lungs were affected we might find dull areas on listening or sounding and increased breathing murmur on other spots. Angular glandular enlargement at point of shoulder or in the neck back of the jaw bone or near the stifle are oftentimes suspicious and occasionally positive symptoms. Hardening of the udder proper or the mammary lymphatic glands at the top of the udder is always suspicious. You will notice that I have made all of these symptoms conditional as only an expert could decide their significance, since many of these symptoms might accompany diseases other than tuberculosis.

TUBERCULIN TEST.—As to the use of tuberculin, I take it that you are all familiar with the procedure of making a tuberculin test and if any of you are not, you will find full printed instructions for making such a test on the backs of all tuberculin charts issued by the Department of Agriculture, which may be had for the asking. Briefly tuberculin is prepared by inoculating glycerinated bouillon with human tubercular germs and then

placing in an incubator, maintaining a proper temperature (about 37 degrees C.), allowing it to remain there until the growth ceases, which usually takes from four to ten weeks. The substance is then boiled and filtered in order to kill and take out all germs; then it is again heated and filtered, this making it a sterile substance or a reagent. Therefore any one claiming that tuberculin can produce tuberculosis simply displays their lack of knowledge and I have yet to hear of any one ever finding a living tubercular germ either microscopically or otherwise in tuberculin prepared at recognized laboratories.

The question is sometimes asked, is tuberculin infallible? My answer is no; nor is any agent which is the product of man's ingenuity infallible. But we do claim that properly prepared tuberculin in the hands of a capable individual is one of the most accurate diagnostic agents known to man to-day. There are conditions which would render tuberculin inaccurate, most of which are now pretty well understood. Some of these are great irregularity in housing, feeding, watering and handling the animals at the time of testing, exposure to extreme weather either hot or cold. The influence of weather on an animal's temperature is of more importance than some are wont to believe. This can be demonstrated to any one's satisfaction by comparing the midday temperatures of a hot day with those of a pleasantly cool day, or with the cooler portions of the same day. Therefore, in my judgment, to make a satisfactory test in extreme weather, unless animals are housed under the most favorable conditions, it is necessary to have morning temperatures on the day on which the tuberculin is injected, to compare with the morning temperatures after the injection. Young stock usually carry a higher temperature, which varies more than mature animals. This is more noticeable in milk-fed animals or animals that are not accustomed to being handled. Advanced pregnancy will occasionally influence an animal's temperature. I say occasionally, since I believe too much stress has been laid on this by some. I have frequently made tests on large herds where most of them were springers, and some have freshened during the test, with

little or no variation in their temperatures. It is true that some of these animals may be carrying an abnormal temperature and in such cases or in other cases where matured animals' temperatures are running around 103° Fahrenheit or over, they should not ordinarily be injected with tuberculin, since such tests are usually unreliable and never satisfactory. This is equally true with animals which happen to come in season at the time of testing. Animals which are affected with what we term open clinical cases will sometimes fail to react; but such cases are usually easily determined by physical examination. Again animals in which the disease is arrested, all lesions being incapsulated so that the tuberculin cannot reach the germ will fail to react, which explains the necessity of repeated tests of a herd where tuberculosis has once existed. It also explains why an animal might react to one test and not react to a subsequent test and still break down and react later.

Animals which are still in the incubative stage of the disease might pass a very careful and satisfactory test and react some two or three months later when the disease is more positively established.

Accidents and other ailments are always to be considered as well as the malicious administration of drugs or recent inoculation with tuberculin. The virtue of these, however, is over-estimated and a well-informed veterinarian can now cope pretty safely with such practices.

WHAT THE STATE HAS BEEN DOING THE PAST FEW YEARS IN ASSISTING THE STOCKMEN TO RID THEIR HERDS OF TUBERCULOSIS.—One wishing to have their herd examined or tuberculin tested by the state, upon making known their wish to the Department of Agriculture, an application form is forwarded to them, which is to be filled in and sworn to; the applicant agreeing to do certain things, one of which is that, after the state has made a test and divided the diseased and non-diseased animals, it is to be agreed that no new animals are to be put in with the non-reacting herd unless previously tuberculin tested. You can

see the advantage of this, since if the party were allowed to replenish his herd with miscellaneous animals he might much better keep his original herd. It is quite probable that some of the reacting animals will be fully as good or much better than anything he could buy in the open market and surely equally as safe. The applicant also agrees to allow a retest of the non-reacting herd at a satisfactory time, as well as to improve faulty sanitary conditions. The entire test is conducted at the expense of the state and the reacting animals are then appraised by a state appraiser. If such appraisal is not satisfactory to the owner or those in charge, it is their privilege to have an appraiser of their own choice and their appraiser and the state appraiser choose a third whose judgment shall be final. The amount of indemnity allowed is as follows: The animals are appraised for their full market value, providing such value does not exceed \$75.00. The law then provides that the owner may retain any of the reacting animals that appear physically sound, keeping them under certain restrictions prescribed by the Commissioner of Agriculture, with due regard to public health. Such restrictions in brief are that they shall not mingle with other animals unless such other animals are known to have tuberculosis and that their product shall not be sold or fed unless it is properly pasteurized. Should the owner prefer to have the state remove such animals from his premises, the state may, if breeding and quality warrant it, place them on an experimental farm to be kept under restrictions such as the owner would need to have kept them under and the owner is then allowed 80 per cent. of their appraised value. If the animals are not considered too valuable to be slaughtered, they are then shipped to an abattoir where they are regularly slaughtered and post mortemed. The result of the post mortem determines what per cent. of the appraised value the owner shall receive. For such cases as are defined as localized, the owner receives 80 per cent. of the appraised value and for such cases which are defined as generalized the owner receives 50 per cent. of the appraised value. Localized carcasses are usually passed for food and generalized carcasses are condemned and tanked. Any

monies received for carcasses or hides sold by the state revert to the State Treasurer and not to the funds of the Department of Agriculture.

New Laws are enacted and others amended year after year, with the idea of improving specific conditions and requirements in matters of state wide importance. The enforcement of these laws is very wisely distributed under different divisions or heads. The Department of Agriculture is charged with the enforcement of certain laws pertaining to the live stock industry of the state as well as matters pertaining directly or indirectly to the health of the people of the state. Of the latter we might refer to the pure food laws which guard against the adulteration of canned goods put on the market for human consumption.

The Department is also charged with the enforcement of the law pertaining to the slaughtering of and shipment of calves, for food, that are too young to be nutritious or wholesome.

It is also charged with the enforcement of the Oleomargarine Law which is to protect an unsuspecting consumer from buying a substance for butter which is not butter.

Another important function of the Department of Agriculture is the suppression and control of contagious diseases and recently there was put on the statute books laws controlling the use of tuberculin in this state as well as requiring the reporting of all tuberculin tests to the Department of Agriculture. The law also specifies how the product of a tuberculous animal must be treated before it can be fed to other animals or put on the market for sale for human consumption.

Unfortunately some of our dairymen who have absolute faith in all the protective measures of the other laws heretofore mentioned, object to the department having anything to say relative to their cattle or to the disposition of the product of such animals, even though the animal is known to be diseased. If we stop to think a minute, is this not a little selfish? If we are to receive protection where we are interested, should we not co-operate in the enforcement of laws to protect our neighbors' rights? Some even go so far as to criticise the Commissioner of Agri-

culture for the strict enforcement of these laws. It is unnecessary to say to you, who are acquainted with our present Commissioner, that he is one of the most honest and sincere, as well as one of the greatest workers that ever held an office of public trust, and his one thought, first, last and always, is for the betterment of the Agricultural and Dairy Industries; and I would say to any of you who do not know him, get acquainted with him; and if any of you are troubled with spring fever, go to Albany, get under his immediate jurisdiction for a time, and it will do more for your nerve force than a whole barrel of Peruna.

The Department of Agriculture does not say positively that the laws as they are to-day are the best and it is probable that they could be improved; and just criticisms or suggestions, when honestly given, are always considered, when practical and applicable. I can say to you in all sincerity that if the present laws pertaining to the use of tuberculin are not the best possible, they have already had some good effect in controlling the dissemination of tuberculosis from herd to herd in our state. I could quote to you several instances as proof of this. Time will not permit this, but I cannot refrain from telling you of one occasion. A gentleman had eleven head of pure bred cattle entered into one of your large sales recently. He had them tuberculin tested, then came to our department and asked us to approve the certificates. We told him we could not do so since we had evidence that led us to believe that the man who had made the test was not giving correct results, which, of course, might have been due to any one of several reasons. He asked our advice as to what he could do in the matter, since he had his car ordered, and we told him the best thing to do at such a late hour would be to have a veterinarian concerning whose work there could be no question, retest the animals. He immediately arranged to have this done and came back to see us three days later, stating that he had had the eleven animals retested and that six of them reacted, and one of which was suspicious. One of these animals had been twice tested by the man whose certificate he wanted us to approve, and to satisfy himself he and the veterinarian whom we approved of,

had taken the animal out and slaughtered it and found it affected with generalized tuberculosis.

Now, gentlemen, suppose these animals had gone to the sale and had been distributed to different buyers, remember that there is a possibility of their having been sold to seven different buyers, having clean herds, such herds being made clean after years of careful testing, disinfecting and other precautions; the introduction of these diseased animals into their herds would have undone all that years of careful and patient labor had done. I ask you in all fairness, was the preventing of this not a good thing for the dairy industries of this state? Would it not repay many of the so-called annoyances that the law may occasion? Cases similar, if not quite so outrageous as this, are occurring from time to time, but it is now not quite so easy for the unscrupulous stockman, perhaps with the assistance of a dishonest horse doctor (please do not speak of such men as veterinarians), to make a test of a herd privately, concealing the results and passing the diseased ones to an unsuspecting neighbor.

I shall not tire you by discussing this subject further. I simply make one appeal, that we must unite in an active effort toward the end we all desire, namely, the eradication of this scourge, that is ravaging our herds. Let us also each do our share in guarding the use of that most useful agent, tuberculin. Our stockmen and our veterinarians should be as Cæsar wished his wife, not only above guilt, but above suspicion.

THE Zeta Chapter of the Alpha Psi Fraternity was installed in the Veterinary Department of the Colorado State Agricultural College Thursday evening, March 24, 1910, at Ft. Collins, Col. The Alpha Psi is a national veterinary fraternity and was established at Ohio State University in 1906. It now has flourishing and prosperous chapters in most of the leading veterinary institutions in America. Dr. N. J. Miller, representing the National Council, assisted by several honorary members, conducted the installation proceedings. Immediately following the initiation, all enjoyed a most elaborate spread at the Linden Hotel, after many responsive toasts were given.

COLIBACILLOSIS.*

BY DR. L. VAN ES, AGRICULTURAL COLLEGE, N. D.

Of the diseases which next to tuberculosis and infectious abortion are most liable to inflict serious damage to our dairy-men and breeders, calf diarrhoea, or scours, occupies a more than prominent place, and while this is not less true in the breeding centers in this country than in those of the old world, it must be admitted that on this side of the ocean the disease has not received the serious attention which it so well merits. This fact, as well as the economic importance of the disease, is the reason why I felt justified to ask that this subject be given a place on our program.

The disease in question was described for the first time by Tolnay in 1799. This observer regards the disorder as an enteritis springing from a faulty digestion of the milk and did not seem to suspect its infectious nature.

The fact, however, that in so many stables the disease assumed an enzootic character gradually led to the suspicion of its true nature.

Delafond hints at the possibility of contagion in 1844 and Obich, writing in 1865, expresses the idea that the enzootic character is due to a virulent substance contained in the faeces of diseased animals. Franck (1876) attributes the infection to a contagion derived from the soil in the stables, which by contamination of the vaginal mucus and the skin of the dams infects the calves either before or during birth.

Dieckerhof speaks of a facultative parasite infecting the young animal soon after its birth.

* Presented at North Dakota Veterinary Medical Association Meeting, Fargo, January 18, 1910.

A systematic bacteriologic study of the disease was undertaken by Gutman in 1884, and his work was taken up by Perron-cito in 1885. It was then found that the blood of the heart and the intestinal contents contained micrococci, which were pathogenic to calves and guinea pigs.

In 1892 Jensen, of Copenhagen, published the results of an investigation of the disease, in which he attributes the disease to an organism which inhabits the normal intestine, and which is closely related to the bacillus coli communis. Those results, subsequently confirmed by numerous other authors, led to the study of the disease in the right direction.

In 1899, Poels showed the important part played by the navel as a port of entrance to the infection, and also called attention to the fact that quite a number of bacterial species are capable of producing a fatal diarrhoea in new born calves.

The fundamental researches of Jensen conducted since his first publication, however, showed that in a preponderating majority of the cases the coli bacillus proved to be the etiologic factor, while the Copenhagen professor furthermore proved the correctness of his assertion by the preparation of an immune serum against the coli bacillus, which proved to be a certain means of prevention in the infected stables.

While the possibility of etiologic factors, other than the bacillus coli communis, must be continually remembered, the writer feels warranted in calling attention to the disease under the name of colibacillosis. The few cases of calf scours which he had occasion to examine in this country always revealed the presence of the B. coli communis in pure culture in the heart blood and the spleen, and while this finding alone does not constitute absolute proof as to the cause of the disease, it certainly is a good ground for suspicion.

Like most of the infectious diseases, colibacillosis is most liable to occur in those regions where breeding is carried on in the most intensive manner, and as animal husbandry is becoming more and more developed, the disease is gradually becoming more

frequent and has reached a stage which must be reckoned with in the management of our pure bred and dairy herds.

According to the virulence of the infectious agent and the nature of the local conditions, the mischief produced by the disease varies.

In some instances the damage remains confined to a comparative small percentage of the animal calf crop, while in others again all calves die within two to three days after birth. In many stables the disease becomes enzootic and springs up at each calving season.

The coli bacillus associated with the disease under consideration is in all respects identical with the bacillus coli communis, present in the normal intestines of most mammals and which was first described by Emmerich in the early eighties. The organism only differs in one special feature, and that is its violent virulence when introduced into the body of new born calves. This virulence has probably been acquired by passage through the body of animals, as it is more than probable that the colibacillus of colibacillosis is originally derived from the intestinal canal of healthy animals.

There they are comparatively harmless, as they are not capable of passing through the normal mucosa. In the event, however, of the impairment of this membrane by whatever cause, the bacilli may find their way into the general circulation, and there and in the remote organs exert a pathogenic influence.

The passage through the intestinal mucosa in young calves is, according to Joest, particularly enhanced by the fact that shortly after birth the intestinal epithelium is not yet provided with the protective mucus zone common in older animals. In addition to this, it must be remembered that the stomach at that age has not yet begun the secretion of the acid gastric juice, so that organisms passing through that organ are exempt from its inhibitory influence on bacterial development and vigor.

There is some good evidence to show that the virulence of the organism increases with every animal passage, so that the

descendants of a once relatively harmless variety may in this manner become mischief makers of prime importance.

It is a well-known fact that coli bacilli obtained from various sources, will show a great number of varieties, as to their pathogenic properties, and some of their peculiarities manifested under cultivation. This fact is of great practical importance when attempts of immunization are to be undertaken, as will be pointed out at its proper place.

It has been pointed out above that the coli bacillus from healthy animals may develop a high degree of virulence for young calves, so that the disease is capable of springing up in a herd without being brought in from the outside. Any influence which is liable to render the intestinal mucosa of the calf vulnerable, such as errors in diet, the introduction of irritating substances, etc., is liable to start the otherwise harmless organism off on a career of mischief.

When the stable once harbors an organism, which has in the manner indicated assumed pathogenic properties, the opportunities for infecting the new born become manifold. The disease producing coli bacillus is now omnipresent and even invades the vagina of the dams, so that the mouth of the calf becomes contaminated even before it has seen light. It is, however, probable that the most common means of infection is furnished by a young animal sucking from a contaminated udder. The mouth always is the most frequent entrance point for the bacillus, but the possibilities of infection through the abrasion of the navel must not be overlooked. The possibility of an intra-uterine infection is by no means excluded.

Susceptibility to the disease is greatest immediately after birth and most of the cases that come to our attention are less than three days old. The susceptibility is further increased by any condition which tends to irritate the intestinal mucosa or which depresses the vitality of the calf. The administration of boiled milk directly after birth is liable to so affect the resistance power of the mucosa as to cause a fatal coli infection. The withholding of the colostrum even may bring about such a condition.

The first evidence of the disease is shown shortly after birth as cases of colibacillosis after the fifth day of life are exceedingly rare. The animal seems tired, shows little or no appetite, and usually remains down. Spasmodic contraction of the limbs during that period are not uncommon.

Diarrhoea is an early feature and most infrequently precedes all other symptoms. The faeces are very thin, often watery, have a light yellow or grayish white color, and a very fetid odor. Often coaguli of milk are present, while a frothy appearance is not seldom seen. Evacuations are accompanied by considerable tenesmus. Later blood may make its appearance in the faeces. A rise of temperature is noticed early in the disease, but owing to the weakness, which so soon becomes a feature in the disease, is usually of but a short duration.

The frequent and feeble heart beats, as well as the shallow respiration, are evidences of the growing weakness.

When the fatal issue is somewhat retarded, the animals present a dismal picture, with their deeply sunken eyes, hollow sides and dead coat. The general weakness finally deepens into a coma, the common forerunner of the end.

The mortality figure is very high and even in the milder forms of the disease runs up above 80 per cent. The losses on an average are above that percentage and even animals surviving the first attack are apt to suffer a relapse or fail to develop in a normal manner.

The occurrence of the disease within the first days after birth and its apparent infectious nature distinguishes coli bacillosis from the ordinary gastro-intestinal catarrh, such as may result from dietetic errors.

Autopsy reveals marked emaciation of the carcass. The mucosa of abomasum and small intestine is congested or may even be ecchymotic.

The intestinal adenoid elements are hyperplastic. The intestinal contents correspond to the condition of the faeces already

mentioned. The rectum is thickened, edematous or inflamed. The mesenteric lymphnodes are enlarged and often hemorrhagic.

Medicinal treatment is usually not followed by the desired results. The fact that great numbers of the causative organisms enter the general circulation at an early stage of the disease explains the futility of active dosing.

Where such is to be undertaken, however, it must be directed against the intestinal irritation and against the general weakness. A mild purge, such as castor oil, may be given with a view of ridding the intestinal canal of its noxious contents. This may be followed by emolients and adstringents, such as a combination of bismuth subnitrici and gum arabic. To this a little opium may be added.

The tenesmus may be combatted by enemata of weak creoline solutions.

The animal's vitality must be supported by stimulants, among which alcohol, especially in the form of egg-nogg, occupies a prime place. Coffee and caffeine also can be made use of.

Preventative measures lead to more encouraging results. The proper isolation of sick animals and the complete destruction of carcasses dead with the disease, followed by a thorough disinfection of the premises must always be recommended.

In stables, where the disease appears to have assumed an enzootic character, the stable should be disinfected once a month. The feeding of the calves must be undertaken in a scrupulously clean manner, and should the use of sterile milk be desired, its use should not begin until after the calf has sucked out the colostrum.

The use of pasteurized milk is indicated. The disinfection of the vagina and external genitali and the adjacent parts of the dam should be accomplished both before and after parturition. In the general process of disinfection, the navel and stump of the cord of the calf should be included. After the washing of those parts with a weak creoline solution, they should be painted over with a 5 per cent. solution of iodine in glycerine or of an antiseptic of similar potency.

From the present indications it seems that in the prophylaxis of colibacillosis immunization of the susceptible animals is apt to become an important feature.

A serum prepared through the use of a given pathogenic coli bacillus will protect calves against infection with the same. It was, however, found that such a serum failed to protect in outbreaks of colibacillosis, in which another variety of coli bacillus was the etiologic factor. This difficulty was partially overcome by the use of a polyvalent serum. In such a serum a great number of strains of the organism derived from various sources is used as antigen in the preparation and in consequence it is specific against a greater range of coli varieties.

While the results of polyvalent anti coli sera are more favorable, their use to a large extent is no more than a guessing in the dark, still leaving a rational method of immunization to be devised.

This difficulty has seemingly been overcome by Jensen, who uses the variations in the fermentation of sugars by the coli bacillus as a base for classification. In that manner some definite groups of varieties can be established, and a serum may be prepared against each group, and this serum is used in outbreaks where an organism belonging to a certain group is causing the mischief.

The rational application of this method, of course, involves the previous bacteriologic determination of the organism, but as this can be done within a short period and by comparatively simple methods, the difficulty offers no serious obstacle to the application of Jensen's method.

IN *The Daily Picayune*, New Orleans, April 7, a three-page article appears relative to a mass meeting at which a New Orleans Pure Milk Society was organized. Among the list of names requested to serve on the board of directors, we notice that of our own Dalrymple, who is *always* a part of any movement that spells progression.

LIP-AND-LEG ULCERATION (NECROBACILLOSIS) OF SHEEP.*

BY DR. L. E. NORTHRUPP.

As a result of several investigations of the disease affecting the mouths and legs of sheep which is more or less prevalent in certain districts of Wyoming, a diagnosis of lip and leg ulceration has been made.

In so far as the name applied to this affection is concerned, it is quite immaterial so long as such a name is distinctive and does not confuse the disease with other affections of an entirely different nature. For instance, it is very important that the name "foot and mouth disease" should not be given to this disease, because the two diseases are totally unlike in symptoms, are caused by different specific agents, and Foot and Mouth disease is so highly infectious that every outbreak which has appeared upon the American soil has been quickly stamped out before it became widespread. Furthermore, the ulcerative condition which affects the lips and legs of sheep does not spread from animal to animal in epizootic form like Foot and Mouth disease, but certain sheds, feed lots, corrals, or pastures become infected with germs causing the disease, which enter the tissues when the mouth or leg is injured by briars, stubble, rough forage, etc., and set up the disease. During the winter when snow is frozen in crusts and the grazing difficult, the lips and legs become injured and the disease may spread very easily.

Lip and leg ulceration is caused by the necrosis bacillus, and as the skin of the lips and legs are involved in many cases, the name of necrotic dermatitis has been applied. It quite frequently happens that the ulcers and sores on the outside of the lips ex-

* Presented at annual meeting, North Dakota Veterinary Association, Jan. 18, 1910.

tend into the mucous membrane lining of the mouth, which accounts for the disease being known as necrotic stomatitis. The important things to recognize are the nature and cause of the disease, and in this connection it may be said that all differing manifestations of the infection by the necrosis bacillus are often brought together under the name or term necrobacillosis. Other names which have been given this disease are acute dermatitis in New Zealand; impetigo labialis in Canada; crusta labialis or contagious pustular dermatitis in England and Scotland, and tiegmaul and malgrund in Germany. The disease also exists in the West Indies, New Mexico, Oregon, Kansas, Montana, Virginia, Maryland, and possibly in other sections of the United States.

The lesions in the early stage usually appear as an acute inflammation of the skin on the outside of the lips. This pimple-like formation is attended by much inflammatory swelling with a decided tendency to form pustules. Then they dry up and form crusts of a dark grayish color and of a fungoid appearance. The growths extend rapidly and become in the course of a few days confluent, forming a large diffused scab, which when removed is found to cover a larger ulcerative surface. Simultaneously with this the lips become tumified, swelling to two-third times their normal thickness. The appetite usually remains good, but the animal feeds with difficulty owing to the sensitiveness of the affected parts. In some cases the scab extends from the lips to the cheeks between the eyes, and at times a muco-purulent discharge appears, which adheres to the nostrils and together with the swollen condition of the lips causes a more or less occlusion of the air passages, resulting in a laborious breathing upon exercise. In some cases the lesions extend into the mouth, producing erosions on the inside of the lips, on the gums, and on the dental pad of the hard palate. These lesions which are of a spongy nature and present a warty appearance are especially noticed in lambs. Lesions on the legs and lips usually co-exist, hence the name lip and leg ulceration. The sheep at this time will show some lameness, especially if the ulcers appear above the coronet, in the fold of the fetlock, or in the vicinity of a joint. The progress and ap-

pearance of the ulcers upon the legs are identical with those upon the lips, and they are soon covered by a thick dry crust, which, when forcibly removed, exposes a granulating surface covered by a thick cream pus. The lesions sometimes appear upon the teats, udders and external genitals of ewes and on the sheath of the bucks; this latter may occur without any lesions being apparent upon the lips or legs and the disease is then known as necrotic venereal disease of sheep, or big pizzle, sometimes erroneously called syphilis or clap. As the lambs are born to such diseased ewes, they may become infected, the lesions appearing about the head and on the legs as irregular ulcers which later form wart-like scabs projecting above the surface. If the disease is neglected, these ulcers may spread over a large area and extend deep into the tissues. The general health of the animal is but little disturbed if the course of the disease is favorable, fever being absent or remaining low (104-5).

Treatment of this disease is very satisfactory if begun in time and applied energetically. It should not be deferred, as better results are obtained by attacking the outbreak as soon as discovered than can be expected if the disease is permitted to spread among the band or penetrate deeper into the tissues of the affected parts. Separate all sheep affected even in the slightest degree. If only a few animals are affected, remove the scab from diseased areas and wash them once daily with a solution of one of the coal-tar dips permitted in the dips for scabies, or cresol solution. If a large number are affected, then you have to treat them under range condition, and the best way then is to have them pass twice daily through a shallow trough with a 5 per cent. carbolic solution or the coal tar preparations. Then swabbing the ulcers on the mouth and lip with the same. Under favorable weather conditions they may be dipped two or three times with very satisfactory results. In cases where the disease has made considerable headway, they must be hand treated by applying a stronger solution, say one part dip to three water, once daily; four or five applications of this is usually sufficient, but in some of the aggravated conditions you will have to use a stronger

caustic, as nitric acid, one to seven water, applied to the necrotic area only.

Experience has shown that sound sheep may be safely pastured upon land that has previously been occupied by animals suffering from lip and leg ulceration, if the winter's frost has been permitted to intervene. The germs of this disease seem to be effectively subdued by this means, and pastures which have become contaminated one season may be considered safe for their customary usage next season. The pens, corrals and sheds, however, must be carefully disinfected to prevent the reoccurrence of the disease, as the baccilli will retain their virulence here for several years.

In connection with this paper, slides showing the following, were run through the lantern: Showing the lesion of the lower lip; beginning to walk lame; 12 sheep of the Dr. Noel experiment were put in a pen with 6 affected and kept there for 8 weeks without any spread of the disease until one's lip was scarified, when he promptly took the disease. Bunch of sheep waiting for the dip. Dip built by the Government, $2\frac{1}{2}$ feet wide at the top and 100 feet long, with the entrance so constructed that the animal cannot see where it is going until on the incline, from which point it cannot return. Tank for boiling the dip; Indiana sheep with scabies—probably saved the state a \$10,000 law suit; his camp at Mt. Taylor; bunch of 4 horned sheep; goats with sheep; the sheep rustle for forage better than without them.

THE Ontario Veterinary College held their closing exercises on April 15 last in the afternoon, Hon. J. S. Duff, Minister of Agriculture, presiding.

THE Chicago Veterinary College closed its twenty-seventh session on the evening of April 5, 1910. One hundred and thirty-seven young men received diplomas.

THE Veterinary Department, Colorado Agricultural College, will have twenty members in its graduating class this year. Commencement date of the college will be June 2.

THE INDIANA VETERINARY COLLEGE held its eighteenth annual commencement exercises on April 1, graduating fifty students. The exercises were held in the amphitheatre of the building, which was beautifully decorated with flags and bunting. About three hundred visitors were in attendance.

COLIC.*

BY C. A. NELSON (K. C. V. C.), BRAINERD, MINN.

This is a subject on which books have been written. Realizing the futility of attempting to write something covering the subject, only one type of colic and only some phases of this will be touched upon in this paper. The word colic, or colicus, is a Latin word meaning a painful state of the colon, and does not signify any special pathological condition. It is, however, taken to have a wide collective application. It is first divided into True and False Colic.

True Colic is generally accepted as indicating a painful state of some part of the intestinal tract.

False Colic obtains from painful conditions of kidneys, uterus and other abdominal organs.

True Colic is further classified according to the etiology of same, such as Spasmodic Colic, Flatulent Colic, Engorgement Colic, Verminous Colic, and Constipation Colic, which may again be sub-divided according to a variety of causes such as impaction, dilation, and paralysis of the bowel, displacement, invagination and volvulus.

Taken as a whole, the most common cause of colic is perhaps heredity or at least a predisposition to weakness and consequent inability of the intestine to properly perform its work. Faulty food and an imperfect system of feeding plays an important part.

One type of colic which is perhaps most often met with in veterinary practice is colic from impaction, due to various causes. The reason for this is the long duration of this kind of colic.

* Presented at the January, 1910, meeting of the Minnesota State Veterinary Medical Association.

Many of the horse owners do not consider colic as a very serious malady. Most of them carry on hand a supply of colic remedies, mixtures of laudanum, ether and what not. Many cases yield to these remedies, especially such cases which persist in getting well in spite of the treatment. When, however, the patient gets worse, after being treated with a number of remedies, the veterinarian is called with the advice that "it must be his water." What does he find? In most cases it is stasis of the bowel, as a result of impaction. Symptoms are too well known to be dwelt on in a short paper of this character. The only important part is to make the differential diagnosis from the other colics, and auscultation at the flank will nearly always tell the tale.

TREATMENT.—This is the topic which is most interesting to the veterinarian. The writer's treatment is an amplification in part, and a modification in part of other authors, and in common with Reeks the keynote is stimulation and elimination.

The first thing is, of course, to get the patient into a well bedded stall or other place which offers protection from injury. If the animal is seen early, before the impacted mass of ingesta becomes too dry, and while the powers of the body remain, one of the following remedies is administered: Barium chloride, arecoline or eserine. The objection to barium chloride is that it must be administered intravenously, which is often difficult to accomplish on account of the restlessness of the patient.

Eserine combined with pilocarpine and a small dose of strychnine is a good agent. Arecoline is similar to eserine in its action, and may be employed in conjunction with the same agents with practically the same results. Before giving any of these drugs, the writer gives an ounce capsule of pulverized ammonium carbonate, which acts as a stimulant and also promotes intestinal secretion.

This treatment can be repeated in one hour or less. Many object to this treatment for the reason of it being dangerous. It

is the opinion of the writer that the danger is overestimated, and those who object the strongest are generally practitioners who have seldom or never used those agents. When they did use it, it was as a last resort. This treatment is not advocated in every case of impaction, but it is believed to be most valuable in well selected cases. It is to be regretted that there is practically no medicinal agent which is infallible in its action. No more so are the agents mentioned. There are cases of bowel stasis in which it is not even advisable to try them. The writer's treatment of these cases consists of an aloetic pill, frequent capsules of ammonium carbonate, nux vomica and colocynth. The latter two agents given in fluid form, diluted ounce doses. Salts and oils may be substituted for the aloes, but with even more uncertain results, and is only advisable in cases of threatening enteritis. Rectal injections of warm or cold water at short intervals will promote peristalsis, and in that way are of some benefit.

If the pain is severe choral hydrate or the H. M. C. tablets prepared by the Abbott Alkaloidal Co. are of some value. If the patient subjected to the treatment does not succumb in less than twenty-four hours they generally make a good recovery.

The first treatment is much to be preferred where immediate relief is possible. When we consider the fact that in the horse, evacuation of the bowel takes place seven to ten times every twenty-four hours, and it will be delayed twelve to thirty-six hours under the latter treatment, it becomes apparent how grave and uncertain the prognosis in these cases must be. It becomes plain that it is very important that more efficacious agents than salts, and oils, or even aloes, should be employed. In common with Reeks, the writer believes that anodynes are of small value; if any, only those should be used which have no tendency to lessen secretion and peristalsis.

Opium which is so valuable in human medicine for allied disorders, should scarcely find a place in veterinary practice as far as this kind of colic is concerned, because it is of so much importance that the bowels should move at the earliest moment possible.

AVIAN DIPHTHERIA OR "ROUP."*

BY DR. O. L. BOOR, MUNCIE, IND.

Roup, or Diphtheria, in birds is an infectious disease that manifests itself on the mucus membrane of the nasal passages, eyes, mouth, pharynx, larynx and may involve the trachea and lungs, and may even extend to the abdominal viscera.

It manifests itself by the formation of a fibrinous greyish exudate, forming upon the mucus membrane of the parts above mentioned, and may be in such quantities as to entirely obstruct the air passages. Ducks, turkeys, pigeons, pheasants and pea fowls are subject to this disease, and it is probable that wild fowl are subject to it.

While Avian Diphtheria is entirely different from the human form, cases are recorded where children have contracted serious and even fatal sore throat from this source. It is also noted by one authority, that the men employed to feed "squabs" by masticating food and blowing into their mouths, contract the disease. While the number of cases of the disease contracted from fowls is small in comparison to the number of birds affected, it is well to use care in handling them, and the habit of carrying chickens to the house to treat them should be discouraged, as there is no doubt but that many cases are transmitted from this source to the human, of which we have no record.

While a comparison of the bacillus causing human diphtheria and the supposed bacillus causing Avian disease shows that, morphologically and in their pathogenesis, that they are in no way alike, nevertheless from the observations of a number of writers it is certain that these diseases are transmissible to human, and from human to birds; therefore it is our duty to use due care

* Read before the Indiana Veterinary Medical Association January 12, 1910.

in handling diphtheretic chickens; especially should the little folks not do so, even if they are the little ones' pet.

It has been claimed that poorly ventilated damp quarters would produce it, but this is not the case if the specific germ that causes the disease is not present, but birds suffering from the disease in a mild form will have the symptoms aggravated and the disease will spread rapidly if kept under such conditions.

About the first symptom noticed in the primary stage of the disease is a tendency to sneeze and wipe the head on the wings, on which there will soon be noticed an accumulation of the exudate, giving them a dirty appearance; fowls with these marks on the wings are often noticed before the sneezing is noticed, and if the owner is wise and heeds this warning, using proper sanitary precautions and treatment, he will cut short the trouble and save the loss that accompanies this malady. On closer examination at this time, a mucus rale will probably be heard in the throat, and you may notice a slight discharge from the nostrils; later you will have the bulging of the sub-orbital sinus, the swelling of the conjunctiva and lachrymal duct, the formation of the membrane; then the sloughing of the membrane, followed by resolution or death depending upon the severity of the attack, and the amount of surface involved.

About eighteen months ago I noticed an article on the treatment of "Roup" in pigeons with diphtheretic antitoxin, and the writer praised it very highly, saying the results were magical. Again at the A. V. M. A. meeting in September, its praises were sung. Shortly after my return from Chicago, I was called to see a flock of 200 Plymouth Rock hens that had recently been purchased from the most noted chicken farm in the country, and found that they were suffering from Roup. On account of their value I was not restricted, and I used diphtheria antitoxin, giving 7/15 minims of the 2,000 units and 5/10 of the 3,000 units as follows:

Sept. 23 6 hens, 10 minims each of 2,000 U.

" 23 4 hens, 10 minims each of 2,000 U.

Oct.	11	1 hen,	10 minims of 2,000 U.
"	15	3 hens,	10 minims each of 2,000 U.
"	23	1 hen,	10 minims of 2,000 U.
"	25	1 hen,	10 minims of 2,000 U.
Nov.	23	2 hens,	7 minims each of 3,000 U.
"	24	3 hens,	7 minims each of 3,000 U.
"	25	3 hens,	7 minims each of 3,000 U.
"	26	1 hen,	7 minims of 3,000 U.
Dec.	2	1 hen,	7 minims of 3,000 U.

You will observe from this table that only hens were affected, and I have at present no theory or explanation for the immunity of the cockerels. Of those treated three died, two shortly after they were brought for treatment, and were unable to stand or take any nourishment, and I consider that the death of these two was due to neglect and delay in treatment. Sanitary conditions were carefully looked after; the sick ones were isolated, and the quarters thoroughly cleansed and disinfected daily, as were also the drinking and feeding troughs.

There has been no cases since December 2, and since that time all of the houses have been sprayed with whitewash, cleaned daily and left open until time for the chickens to go to roost.

The fowls treated were in all stages of the disease and in only a few cases were any of them given the second treatment. If a remedial agent can be called magical, "Diphtheria Serum" as a cure for Roup belongs to that class.

Reference for material of this paper is Moores Pathology of Infectious Diseases.

DR. W. W. YARD, Denver, Colo., is assistant dairy commissioner of the state of Colorado.

DR. A. W. WHITEHOUSE, of Larimer, Wyo., is taking an extra year in Veterinary Science in the Veterinary Department of the Colorado Agricultural College. After commencement in June the doctor will return to his old and well-established practice in Larimer.

MY EXPERIENCE WITH HOG CHOLERA.*

BY DR. F. A. BOLSER, NEW CASTLE, IND.

Hog Cholera, the most destructive disease known to the domestic animal in the Middle West, the one that causes greater loss in shorter time to the farmer than all other diseases throughout the corn belt, the one that has prevented the farmer from lifting his mortgage, the one cause for extreme price of meat, causing many poor people to do without bacon, 30c.; lard, 20c., and all meats in proportion, working a great hardship to all, can be traced in a way to the very great loss of hogs throughout the great hog-raising states by cholera.

The Bureau of Animal Industry of the United States have expended a large sum of money in experimenting and have at last produced a serum, which, if used in time, will immune and save about 85 per cent., and vaccinating aged hogs you can immune indefinitely. Pigs weighing 15 to 20 pounds are immuned until they attain the weight of about 120 pounds, after which the resistance is slight. The offspring from the mothers immuned have a slight resistance, but are not immuned against severe cases. It will not pay to vaccinate large herds of small pigs that have already contracted the disease, as they do not have the vitality to withstand the vaccination and the disease already contracted. I have vaccinated a small herd of 65 pigs weighing 30 to 40 pounds and all died but six. The bureau informed me last Friday that they were turning all small hogs down that were affected, because the recoveries do not warrant the expenditure.

On October 29, 1909, I vaccinated 51 hogs for Lon Hudson; 49 would average 300 pounds and two 600 pounds. Thirteen of the smaller were very sick at the time, so bad that Mr. Hudson at first said, "we will not vaccinate them." The male was so weak that he could not turn over and yet he recovered. I gave to those

* Read before the Indiana Veterinary Medical Association, January 12, 1910.

weighing 300 pounds 120 c. c. On October 31, 1909, I vaccinated 30 weighing from 160 to 250 pounds, all very sick; on November 3d we vaccinated the rest of his herd amounting in all to 130 head. About 50 per cent. were sick at the time of vaccination. We saved 100 of this herd. I am quite confident that if we had commenced when the disease first made its appearance we would have saved 85 per cent. Mr. Hodson had lost 48 large hogs and 75 pigs before any were vaccinated. We were instructed to re-vaccinate any that were not doing well at the end of ten days. Following instructions on the eighth day, we gave the serum to about a dozen the second time; all were very weak, scarcely able to get up by themselves; all died. On November 21, 1909, vaccinated 115 head for Wm. O'Hara. This herd was just breaking out, not many had died and not many sick. However on the abdominal muscles quite a few were purple, clearly showing the infection. Only one died after the injection was given. Mr. O'Hara had a very clean warm place for them, which is very necessary; another important thing is that you starve them for a few days from everything but water. This herd weighed from 70 to 300 pounds. On November 24, 1909, I vaccinated 75 head for John M. Riley, all of them except seven were small pigs weighing 30 to 40 pounds and all very sick. All of the small ones died and two of the large ones. I am confident that it does not pay to vaccinate small pigs that are affected. On November 22, 1909, vaccinated 28 head for Dan Jones, all were affected; all recovered but six. On December 26, 1909, vaccinated 16 brood sows for Mr. Jones; all were affected and some quite weak; seven have died up to this time. The quarters are not warm and they are lousy. Another thing that should be done, and that is have them free from lice by using crude oil, which destroys both lice and nit. If every one would take the sanitary precautions with hogs that they take with other stock, we would not have so much cholera. Sanitary precautions are as essential, yes more so as a prophylactic than the average farmer can be made to understand. I have in mind a man who keeps his hog pen as clean as his barn, and he has never had a case of cholera.

PRURITUS OR MAD ITCH IN CATTLE.*

BY A. F. NELSON, LEBANON, INDIANA.

ETIOLOGY.—Consuming corn husks, corn stalks, corn cobs that have been fed to hogs and partially masticated and dropped out of the mouth or swallowed and afterward voluntarily ejected from the stomach.

SEMIOLOGY.—If occurring in a large herd of cattle, the finding of one dead may be the first sign or indication to the owner that there is anything wrong. If found dead, the animal will show swellings about the head and neck, possibly the shoulders; evidences of the animal having rubbed these parts more or less severely; may be a serous exudate from the abraded surface, or skin may have a leathery appearance; may be evidences of hæmorrhage from the nostrils; sometimes from the anus.

SYMPTOMS.—When first noticed, the animal is seen rubbing its head against any object in reach; not marked at first, but as the disease progresses the rubbing becomes more violent, animal more restless; may rush from place to place, or plunge head onto the ground, seemingly using all the force at its command; bellowing at his stage, and from now on the animal gets rapidly worse and falls from exhaustion and may die in a few minutes.

POST MORTEM.—On examination, the rumen is found to contain one or all of the substances previously mentioned, some properly masticated and some not. In two cases I found lesions of acute gastritis of the rumen, but in no others. Reticulum practically no lesions. Omasum, dry and evidences of congestion,

* Presented at January, 1910, meeting, Indiana Veterinary Medical Association.

some more marked than others. Abomasum, did not show much congestion in any of the cases. Intestinal tract, showed no lesions and the only thing abnormal was the enormous quantity of bile. Bladder, no lesions. Kidneys showed congestion of both cortical and medullary portions in most cases. Liver engorged and the color of gold in all but one case. Gall bladder distended. Peritoneum showed no lesions except where in contact with the stomach.

TREATMENT.—Prophylactic of much more service than therapeutic; however, if one is called early, by going through the herd and giving a strong cathartic, as sulph. magnesia, gamboge and oleum lini followed by liberal doses of salicylate of soda or salol, he is able to abort the trouble. But after symptoms are developed even though slight, medicinal treatment is of but little avail. So it is incumbent upon the veterinarian to go through the whole herd and treat each animal as if it would develop the disease.

SUMMARY.—This is evidently due to a toxine formed by bacteria on the fermented and partly digested material, which seems to effect the liver more than any other organ, and the action of the organisms upon this organ producing the toxic effect on the system in general, and reflex action on the brain, from the fact that the pruritis is confined to the head principally.

DIFFERENTIAL DIAGNOSIS.—The only disease with which a practitioner might confound this disease is rabies; but in rabies there is seldom pruritus in cattle, though it is common in the horse, especially of the nose. Another difference is the animal is not vicious nor irritable at the approach of man; can be driven or caught without producing excitement or convulsions as in rabies.

THE splendid report of the meeting of the Indiana Veterinary Medical Association at Indianapolis, January 12th and 13th in its fourteenth annual convention, will be published in the next issue of the REVIEW.

REPORTS OF CASES.

A CASE OF AZOTURIA.*

By DR. J. BURTON, Wheaton, Minn.

During my practice of veterinary medicine it has not been my lot to treat a great many cases of azoturia, although I have treated a few with varying luck.

The case I am about to describe is not one of any peculiarities as to the disease nor the treatment, but was chosen rather for the unusual conditions before treatment was begun. The patient, a white gelding, weighed about 1,200 pounds, age 18 or 19 years, time middle of February, and the temperature below zero.

On the morning of the day in question, the horse above described, with mate, was hitched to a sled and driven by his owner, started for town. After going a distance of two or three miles the horse began to lag and stumble, but as the snow was very deep and travel difficult, the driver paid little attention, until the horse began to sweat and seemed quite lame in the left hind leg. The driver stopped and made a thorough examination of the foot, thinking he had picked up a nail. Finding everything apparently all right, the driver waited until another team came up, when the horse was started and apparently was all right for nearly three miles more, when he suddenly stumbled against the pole and all but fell. By this time they were quite a distance from any buildings. The driver concluded if he could get about one and a half miles further, he could get the horse in a barn and could then telephone for assistance. But a short distance farther the horse went down, unable to rise, even with two or three men to assist him. Seeing nothing could be done, the horse was left lying in the snow, with only a couple of blankets over him, which of course would not remain in place very long with no one to watch him, while the driver went back home, a distance of about six miles, and procured assistance and a stone boat to haul the horse home on, which was done without much difficulty.

* Presented at the January, 1910, meeting of the Minnesota State Veterinary Medical Association.

After getting the horse in the barn, I was telephoned for, but being out at the time, word was left for me to come as soon as I returned.

I did not get home until after six p. m., and as the owner lived about fourteen miles from town, and the roads heavy, I did not get to the horse until after nine p. m.

Now the horse had been down nearly twelve hours without any medical assistance. When I got to him he was in considerable pain and sweating all over. I immediately drew his urine, which was very thick and dark colored. After his water was drawn, he immediately became easier and lay stretched out, resting for a time; then he attempted to rise, but had no use of his hind limbs.

A sling was used to raise him, but he was so helpless all attempts to keep him on his feet for the time being were abandoned.

TREATMENT.—I now gave him a purgative of eight drams of aloes, in a quart of raw linseed oil, and hot water injection. In a short time after gave him three drams of potassium nitrate and repeated the potassium nitrate in about four hours. I had the legs well rubbed and bandaged, and as soon as possible had hot packs of oats applied over kidneys and back and patient completely done up in blankets. The hot packs were changed about every half hour, and continued all night. Soon after the packs were applied, the patient commenced sweating again, and was kept warm enough so he did not dry off until after the pack was discontinued. When the patient was rubbed dry as possible, mustard was applied over the lumbar region, and he was well blanketed.

Water was given him several times during the night, of which he drank considerable each time. About nine a. m. we made preparations to raise him, and when about ready to place the sling under him he made an attempt to get up, and with a little help, did get up, but was very unsteady and weak. By working fast we managed to get the sling in place and kept him on his feet for a considerable time. While standing, his legs were again vigorously rubbed, and after they began to warm up and circulation was better established, the legs were again well bandaged. By this time the physic was operating, and shortly after getting up the patient passed water, passing a considerable amount, which was not as dark colored nor as thick as when drawn upon my arrival. After the patient had been up for a

time and circulation more normally established, he seemed to be much easier and began to eat.

I did not hear from the patient for nearly two weeks, when I was told the horse was all right, excepting that he was still lame in the left hind leg. A short time after this, being in the neighborhood, I called in to see for myself how the patient was. Upon looking him over I discovered the anterior femoral muscles had begun to shrink; this had not been noticed by the owner. I prescribed tonics, a strong liniment to be applied to the muscles, and plenty of exercise. The tonic and liniment were used, but the exercise left out, as the owner said he could not bear to force the horse to walk when he was so lame; this continued until July. By this time I was beginning to get out of patience, as during the warm weather some member of the family was in town every few days, and as the horse was a family pet, I was forced to listen to long tales of woe about how lame he was, I never failing to recommend forced exercise. This continued until about the middle of July, when I was called one day as I was passing by the farm to come in and look at the horse again. I asked the owner if he had worked the horse any, to which he replied he had not, whereupon I told him I did not see as there was any use in calling me or anyone else when he did not do as he was told, and I went on. Nothing more was said about the horse, although I saw the owner quite frequently, until about six weeks after, when I met the owner on the road and he told me he had put the horse to work the next day after I was there, and had kept him working every day since, although it seemed hard to work him while he was so lame, but they gave him plenty of time, and in a short time he was walking nearly as sound as ever.

When I next saw the horse, which was about November 1st following, he had apparently fully recovered and the muscles were as plump as ever.

FIBROLYSIN IN TENDONITIS AND TENDOVAGINITIS.*

By C. J. SIGMOND, (O.V.C.), Pipestone, Minn.

Fibrolysin is an aqueous solution of a double salt composed of one molecule of thiosinnamin and half a molecule of sodium salicylate.

*Presented at Minnesota State Veterinary Medical Association, January 12, 1910.

I will give the results obtained in three cases and the results obtained by W. Gottschalk and M. Baruth in other cases in which they used fibrolysin.

Case One.—Mare 12 years old, very lame, had used hot and cold applications, anodyne liniments and blisters, but did not get satisfactory results. I concluded to try fibrolysin; gave two injections; after a week's rest swelling and lameness subsided.

Case Two.—Practically same as No. One; gave this horse three injections four days apart; after three weeks' rest no lameness, swelling practically gone.

Case Three.—Bay gelding, age nine years. This animal had been laid up for seven or eight weeks very lame, had been treated by an empiric without any results. When I saw the animal I decided to use fibrolysin. I gave him four injections of fibrolysin; after four weeks' rest he went sound.

I will try and cite cases treated by W. Gottschalk, with fibrolysin. He used it in treating a fourteen-year-old horse that was no longer serviceable on account of a chronic tendonitis and tendo-vaginitis, with the result that the animal after six injections, at the end of fourteen days, was again put to work.

The second case he relates was that of a nine-year-old horse which received three subcutaneous injections in the diseased leg and three subcutaneous injections in the neck. After twenty days this horse also became serviceable. M. Baruth states that it brings about a regressive change in the well-known connective tissue growths.

The first case he cites was that of a phlegmon of the thigh, accompanied with cutaneous sclerosis. This condition resisted a four weeks' treatment with various salves. After a second injection (subcutaneous) of 11.5 c. m. of the remedy, after an interval of four days almost complete recovery ensued.

The second case was that of an ox. As a result of extreme hard work a non-inflammatory painless, hard, flat swelling about the size of a soup plate formed on the left shoulder. After two subcutaneous injections (the last one made in the center of the neo-formation) it almost completely disappeared. The third case, as a result of an injury to the hock joint and fetlock joint of a horse, a cutaneous sclerosis formed which likewise disappeared after two subcutaneous injections of the remedy.

On the basis of these results Baruth believes that he can recommend the use of a fibrolysin in all cases.

COLIC.*

By DR. BENNET PORTER, Albert Lea, Minn.

It may seem a little strange that I should take so common a disease as colic for my subject, but as common as it may be, nevertheless it is one of the diseases that gives the veterinarian a great deal of trouble and anxiety.

And as for a specific treatment we have not as yet found one. Some practitioners inform me that they do not have much trouble with colic. I am sure that this is not the case with me. As colic has been one of my hardest battles to fight, and with a goodly number of victories, I have also had a great many defeats.

So much so that at times I have been willing to try any remedy that I thought might better my condition.

Last spring while reading the *Veterinarian*, published at Detroit, Mich., I came across Dr. C. E. Bassler's article on the "Therapeutics of Barium Chloride," which was read before the Kansas Veterinary Association, at Topeka, January 12th and 13th, 1909.

But as I had used barium a few years ago, and with such unfavorable results, I concluded at the time never to use it again. But I am convinced now that the unfavorable results at that time were largely due to too large doses.

But during this fall colic has seemed to be unusually bad, and I not being altogether satisfied with eserine, or arecolin, I concluded once more to take up the use of barium chloride.

We will now take up case No. 1. Gelding seven years old, weighing 1,600 pounds, came under my care about 1 p. m.; was in a great deal of pain, perspiring profusely and romping about a great deal in his stall, abdomen being quite badly distended with gas. I first used the trochar to relieve gas, after which I gave one and one-half pints oleum lini with three ounces of terebenth, and followed shortly after with carbonate of ammon., two ounces and one-half ounce nux. Rested for an hour and then gave one grain strychnine, subcutaneously; got a great deal of excitement, but no motion or action of the bowels. Everything seemed to be shut down, and with only an occasional murmur of gas. Gave enemas of warm water freely for an hour or two, emptied out the rectum, but with all this my patient did not seem to be getting any better, but rather, on the contrary, acted a little worse.

I then administered barium 10 grains in 12 c. c. of normal salt

* Presented at the January, 1910, meeting of the Minnesota State Veterinary Medical Association.

solution, intravenously administered very slowly against the blood stream; in three minutes he became quite restless, and in about four or five minutes began to retch and strain and pass from three to four feces at a time.

He continued this for about an hour and there seemed to be a pronounced peristalsis of the bowels.

I then put him in the barn, and let him stand for an hour or so; he still seemed easy. I then gave him an aloetic capsule and he made a good recovery. I have used this treatment on some ten cases, of which only one has died. But this death was from mechanical pneumonia, following four days later, and I, too, am like Dr. Bassler, would no more think of going to see a case of colic without barium chloride with me, than I would think of going to see a patient without my medicine case.

A CASE OF PARAPLEGIA SUCCESSFULLY TREATED WITH SUBDURAL INJECTIONS OF FIBROLYSIN.

By DRs. STEFFEN and STEFFEN, El Paso, Texas.

Complete paralysis of hind extremities in an English bull terrier following a protracted case of distemper.

The usual measures, iodides, mercurials, etc., failing to bring results, it was decided that permanent changes had taken place in the chord which could only be remedied by actual contact with near-normal body solvents. On this hypothesis fibrolysin was selected as the most bland and at the same time the most active agent.

Not being sure of a satisfactory puncture in a posterior region of the column, the atlo-axoid space was selected and an aseptic injection of 2.3 c. c. made directly onto the surface of the chord in this region.

Within an hour and continuing for twelve or fourteen hours, the patient exhibited typical symptoms of a brain trauma, quivering of the entire body, labored breathing and a most violent delirium. These symptoms gradually disappeared during the next twenty-four hours and to our surprise, with their departure came a perceptible improvement in the power and co-ordination of the affected parts. The site of injection received no other treatment than two paintings of tincture of iodine and gave no trouble. At

this writing, eight days later, the patient walks confidently, only a slight lack of co-ordination being in evidence.

CONCLUSIONS.—In our opinion the good results in this case would warrant the use of this treatment in others. We all know how long drawn out these cases usually are. An almost complete recovery in eight days is remarkable. In future cases we shall repeat the injections every four days. For the accurate and safe performance of the puncture we would recommend profound anaesthesia. Forestalling the symptoms of brain trauma, morphine is contra-indicated.

The fibrolysin should be warmed in the original ampule to a little above body temperature before injection. Inject slowly.

DR. CHARLES EASTMAN, B. A. I., has been transferred from Dr. Hick's force at Sacramento to Dr. McKellar's force on "Cattle Tick Eradication" in San Luis, Obispo County, California.

IN renewing his subscription to the REVIEW recently, Dr. J. B. L. Terrell, Dresden, Tenn., enclosed the following clipping from his county paper:

"Robt. Tillman has or did have a curious freak of nature in the shape of a lamb. Beginning with its loins and going backward it consisted to two well developed and perfectly formed lambs, one being of the male and the other of the female sex. Going forward from its loins to its shoulders it was only one body, but had two sets of fore feet, each set being perfectly formed. It was neckless or without neck and its head was jammed down in its shoulders cross-wise. There were four ears, one on each side and one on the top of its head, protruding from its head as one ear, but about one inch from the head it divided into two parts. It had a hole one inch wide in the center of its forehead and two eyes both being up and down instead of side ways, located in the cavity of its forehead. It had a full set of upper teeth and its under teeth were as scarce as hen's teeth. Its upper lip hung down over its mouth like an elephant's trunk. Its mouth was about the size of one's finger and its tongue, if it had any at all, was undiscernable. To sum the whole up in a few words, it was an animal with eight perfect legs, one body, four ears, two eyes, one set of teeth, no tongue, two bushy tails and a snout resembling that of an elephant."

ARMY VETERINARY DEPARTMENT.

ENDORSEMENT OF THE ARMY VETERINARY BILL BY THE PROFESSION.

It is very gratifying to report that the appeal of the AMERICAN VETERINARY REVIEW in behalf of Senate bill 1692 has found prompt response. Naturally the army veterinarians interested are working hardest for the bill, but we are also in receipt of a number of copies of letters written to Representatives in Congress by our colleagues in civil life that speak with such energy and vigor as to be most refreshing. They breathe the tone of a stirring profession.

At this writing no direct hope can be entertained for the passage of the bill. No promises to that end have been made by anybody who can speak with authority. Perhaps it cannot be otherwise. But the bill has been shown up and is being agitated, and much depends now upon hanging constantly on its trail. Undoubtedly much more need to be done to have it acted upon, and we again ask our colleagues in civil life, who have not done so already, to muster all the influence they can upon members of the House of Representatives.

We may state that a few of our friends have overshot the mark in their enthusiasm, in telling their Representatives that this bill will put our army veterinary service on a footing second to none of any army in the world. We regret to say that such a bill or such a veterinary service is a long way off. The improvement of the service affected by the provisions of the present bill is, indeed, so slight that the enemies of the bill have all along maintained that it is not worth while to bother about it. However, the authorities have taken such a firm stand in squelching any attempt at anything better, that it became plain to be good sense to accept this offer, show better results of our work, and then ask for another improvement. An effective army veterinary will only be won by fighting for it inch by inch, and this for many years to come.

However this may be, let our friends in civil life be not disturbed by the littleness of the prize offered, but let them insist

that that much be given to us at the present. If successful, they can feel with us in the army that another step forward has been made, only one, and that we are ready to march on.

Please remember that we must yet work for this one step, and what can be done should be done at once.

O. S.

WASHINGTON, D. C., April 18, 1910.

Editors AMERICAN VETERINARY REVIEW:

The bill to reorganize the veterinary service of the United States Army will not become a law during this session of Congress. It is the policy of the House Military Committee to withhold any military legislation at this session. I cannot agree with Dr. Schwarzkopf's ideas, in the main, relative to the effect of this failure on future army veterinary legislation. Many members of the House Military Committee are in favor of the present bill, but for many reasons this bill, with many other meritorious measures, must await future action. Nor is the failure to get favorable action in the House due to any lack of labor on the part of the profession or of your committee. It is poor politics to waste efforts at the wrong time and to create antagonism among friends of the army veterinarian in Congress.

Sincerely Yours,

J. P. TURNER,
Chairman Legislative Committee A. V. M. A.

THE graduating exercises of the McKillip Veterinary College, Chicago, Ill., session 1909-10, took place in Handel Hall on the evening of March 31, at 8 p. m. The large auditorium was completely filled by a large and highly appreciative audience, friends of the graduates and others. After the invocation by the Rev. C. A. Kelley a select and attractive musical program was rendered. The address of the evening, which was both eloquent and inspiring, was delivered by Dr. Wm. A. Evans, Health Commissioner of the city of Chicago, after which President M. H. McKillip conferred degrees on ninety-three graduates.

CORRESPONDENCE.

WHAT IS TO BECOME OF THE VETERINARIAN IN THE PROJECTED UNITED STATES DEPART- MENT OF HEALTH?

CHICAGO, April 7, 1910.

To the Editors of the AMERICAN VETERINARY REVIEW:

GENTLEMEN—We of the veterinary profession are sleeping the thousand years sleep of Pharaoh. We are stone-busted Sphinxes and brown-paper mummies. And we will remain so, unless the breath of life gets into us, and, the spirit of modern progress stirring us, we shake off our stupor and stupidity. Are we to have identity as a profession, or are we willing to be lorded over by another profession? We claim most justly that, as a body of medical men, our science and its application demand strength of mind and a range of intelligence at least equal to that required in human medicine. The different professions having to do with medicine are sisters, if you please, but they are sisters of equal beauty and attractiveness. It will never do for men at work in human medicine to suppose that their labors are of so much more benefit to human health than those of workers in the veterinary profession, because this is only a half truth, proceeding from egotism, self-adulation and bumptious conceit. If the whole truth were considered it would be found that each profession has a large measure of service to render the people in general for the safeguarding of the public health. Both sides of the head, both forms of medical intelligence, are needed for this kind of public benefit:

“Something I owe to the soil that grew—
More to the life that fed—
But most to Allah who gave me two
Separate sides of my head.

"I would go without shirts or shoes,
Friends, tobacco or bread,
Sooner than for an instant lose
Either side of my head."

Why, then, should one profession be subordinate to the other? Why should the prestige which the human medical profession has obtained only after the struggles of many scores of years and the organized power which it has formed in this country in the American Medical Association, be brought into play to make our profession a mere subaltern in the projected United States Department of Health? That is what would occur, apparently, if the Bureau of Animal Industry were transferred to the Department of Health, as planned in the bill now before Congress. The editorial, "A Department of Health," clipped from *The Journal of the American Medical Association*, which accompanies this letter, in defence of the formation of a Department of Health, rather than a Bureau of Health, says: "If health agencies that exist in other departments are to be transferred and made parts of an existing bureau, they must become subordinate divisions of that bureau. While such a proposition might be considered, it would naturally arouse a storm of protest from the bureaus themselves, as well as from the departments affected. The natural antagonism thus aroused would probably result in the defeat of the proposal." The same argument applies equally well to the proposal in the bill to transfer the Bureau of Animal Industry to the new Department of Health, for by that transfer a large body of men belonging to the lusty, youthful but fast-growing veterinary profession would be made subordinate to human medical men, which is as absurd as it is impractical and unintelligent.

But I have said enough to open up the question of the place of the veterinarian in the scheme proposed by the bill. As a result of my own thought and my conversations with prominent veterinarians, I could add very much more. My object in writing this letter is to point out the activity of the medical profession in the project, its organized power and potential energy being exercised through the American Medical Association and its organ, *The Journal of the American Medical Association*; the eye it has on available appropriations to be laid hold of for the purposes proposed. On the other hand, would that we would bestir ourselves and give this most important movement some

thought! We should do our thinking beforehand, if we are not to sulk afterwards with regrets. The political aspect of the bill does not affect me. I am first and last a veterinarian.

Below is the bill, as printed in *The Journal of the American Medical Association* (Vol. 54, No. 9, p. 725), and an editorial which appeared in the same paper March 10, 1910 (Vol. 54, No. 12, p. 972).

I. BILL TO ESTABLISH A DEPARTMENT OF PUBLIC HEALTH.*

The following bill, "Establishing a Department of Public Health, and for other purposes" (S. 6049), introduced into the United States Senate by Senator Owen, of Oklahoma, has been read twice and referred to the Committee on Public Health and National Quarantine.

This bill creates a separate department and provides for a Secretary of Public Health. While this is ideal and it is to be hoped that such a condition may be ultimately realized, the opposition to the enlargement of the Cabinet and to the creation of any new Cabinet officers may make it exceedingly difficult to pass such a bill. It is, however, most gratifying, as an evidence of the increasing public interest on this subject.

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

"Sec. 1. That there is hereby established a Department of Public Health, under the supervision of the Secretary of Public Health, who shall be appointed by the President a Cabinet officer, by and with the consent of the Senate, at a salary of \$12,000 a year, with like tenure of office of other Cabinet officers.

"Sec. 2. That all departments and bureaus belonging to any department, excepting the Department of War and the Department of the Navy, affecting the medical, surgical, biologic or sanitary service, or any questions relative thereto, shall be combined in one department, to be known as the Department of Public Health, particularly including therein the Bureau of Public Health and Marine Hospital Service, the medical officers of the Revenue Cutter Service, the medical referee, the assistant

* I am indebted to my dear friend and colleague, Dr. Joseph Hughes, President of the Chicago Veterinary College, who handed me copies of the articles from the *Journal of the American Medical Association* here reprinted.—D. A. H.

medical referee, the surgeons and examiners of the Pension Office, all physicians and medical officers in the service of the Indian Bureau or the Department of the Interior, at old soldiers' homes, at the Government Hospital for the Insane and the Freedman's Hospital and other hospitals of the United States, the Bureau of Entomology, the Bureau of Chemistry and of *Animal Industry* of the Department of Agriculture, the hospitals of the Immigration Bureau of the Department of Commerce and Labor, the emergency relief in the Government Printing Office, and *every other agency of the United States for the protection of the health of the people of the United States, or of, animal life*, be and are hereby transferred to the Department of Public Health, which shall hereafter exercise exclusive jurisdiction and supervision thereof.

"Sec. 3. That the official records, papers, furniture, fixtures, and all matters, all property of any kind or description pertaining to the business of any such bureau, office, department or branch of the public service is hereby transferred to the Department of Public Health.

"Sec. 4. That the Secretary of Public Health shall have supervision over the Department of Public Health, and shall be assisted by an Assistant Secretary of Public Health, to be appointed by the President, by and with the advice and consent of the Senate, at a salary of \$6,000 a year, with such duties as shall be prescribed by the Secretary not inconsistent with law.

"Sec. 5. That the Secretary of Public Health shall be authorized to appoint such subordinates as may be found necessary. There shall be a chief clerk appointed, at a salary not to exceed \$3,000 a year, and such other clerks as may from time to time be authorized by Congress.

"Sec. 6. That the officers and employees of the public service transferred to the Department of Public Health shall, subject to further action by Congress, receive the salaries and allowances now provided by law.

"Sec. 7. That it shall be the duty and province of such Department of Public Health to *supervise all matters within the control of the federal government relating to the public health and to diseases of animal life*.

"Sec. 8. That it shall gather data concerning such matters, impose and enforce quarantine regulations, establish chemical, biologic and other standards necessary to the efficient administration of said department and give due publicity to the same.

"Sec. 9. That the Secretary of Public Health shall establish a Bureau of Biology, a Bureau of Chemistry, a *Bureau of Veterinary Service*, a Bureau of Sanitary Engineering, reporting such proposed organizations to Congress for suitable legislation relative thereto.

"Sec. 10. That all unexpended appropriations and appropriations made for the ensuing year shall be available on and after July 1, 1910, for the Department of Public Health, *where such appropriations have been made to be used by any branch of the public service transferred by this act to the Department of Public Health*. It shall be the duty of the Secretary of Public Health to provide, on proper requisition, any medical, sanitary or other service needed of his department required in another department of the government.

"Sec. 11. *That any other department requiring medical, surgical, sanitary or other similar service shall apply to the Secretary of Public Health therefor wherever it is practicable.*

"Sec. 12. That all officers or employees of the government transferred by this act to the Department of Public Health will continue to discharge their present duties under the present organization until July 1, 1910, and after that time until otherwise directed by the Secretary of Public Health or under the operation of law.

"Sec. 13. That all laws or parts of laws in conflict with this act are hereby repealed."—*Journal of the American Medical Association*, Vol. 54, No. 9, p. 725.

II.—A DEPARTMENT OF HEALTH.

The introduction into the Senate by Mr. Owen of a bill proposing the establishment of a Department of Health, which we printed three weeks ago, and the correspondence between Senator Owen and Dr. Charles A. L. Reed, printed on another page of this issue, seem to indicate that a movement for a department, rather than a Bureau of Health, is taking shape in Congress; at least the cause has a staunch champion in the Senate. This is gratifying, since it is known that Senator Owen's bill was not prompted either by the American Medical Association or by the great lay movement represented by the Committee of One Hundred—the two organizations that have come to be recognized as the natural sponsors of all manifestoes in behalf of advanced health legislation. The measure is therefore

to be accepted as additional evidence of popular interest in a movement of deep and vital concern to the people.

Senator Owen comes squarely to the old issue of a department versus a bureau, and does so in language that leaves no doubt as to his attitude in favor of a department, with a Secretary in the Cabinet. His position is sustained by reasons that would seem sufficient. The importance and the dignity of the task of conserving human health as a means of preserving human life, efficiency and happiness are considerations which enter into his argument for a department. As Senator Owen recognizes in his letter, we already have a Bureau of Public Health. The proposal to create another would be in a sense to propose a duplication of governmental machinery. If health agencies that exist in other departments are to be transferred and made parts of an existing bureau, they must become subordinate divisions of that bureau. While such a proposition might be considered, it would naturally arouse a storm of protest from the bureaus themselves, as well as from the departments affected. The natural antagonism thus aroused would probably result in the defeat of the proposal. What is needed is to increase and not to lessen the prestige, influence, power and efficiency of every bureau, division, institution or agency that has to do with the conservation of health.

That this can be more satisfactorily done by a department seems evident from Dr. Reed's summary of reasons for the creation of a department—namely, that sanitary science has demonstrated its efficiency and that the people are in need of its benefits; that a Bureau of Health now exists, and that the established precedent demands its advancement to a department. While no bill has yet been introduced in the House, the Committee on Interstate and Foreign Commerce can take up the question, following the suggestions contained in the President's message regarding advanced health legislation. *The Committee on Medical Legislation of the American Medical Association has already applied to Mr. Mann, Chairman of the House Committee, for a hearing on the general question, as well as on specific points enumerated in Dr. Reed's letters to Senator Owen and Mr. Mann.*

Mr. Mann's championship of the Pure Food and Drugs act and his identification with other progressive public health legislation lead to the hope that he will be equally zealous in the behalf of the department idea. There is a growing demand on

the part of the press, both lay and professional, for greater activity on the part of the national government in the conservation of the public health. It is also known that many senators and representatives are already favorably inclined to the idea of a department. It seems, therefore, that *the time is opportune for every citizen interested in the welfare of the people not only to echo but also to act in accordance with the sentiment of Senator Owen*, when he says: "I believe in conservation, and first of all in the conservation of human life."—*Journal of the American Medical Association*, March 10, 1910 (Vol. 54, No. 12, p. 972).

The italics are my own. The bill may be defeated—indeed, *The Journal of the American Medical Association* predicts its defeat. Ultimately no doubt there will be a United States Department of Public Health, with a Cabinet officer at its head. While things are at a flux, in this the formative period and period of readjustment of government machinery for the conservation of the public health, it is obligatory upon us as professional men to make the situation the food for thought and action. As a separate profession I am of the opinion we would not care to stomach having to pay fealty to overlords at the head of a department belonging to another profession perhaps not altogether sympathizing with us. We are bound to have a large share of sanitary work for the conservation of the public health to do—that is our destiny. The magnificent federal meat inspection service is ours by origination and development. The question is, Would this and all other agencies of the Bureau of Animal Industry erected in the interests of the public health be made more serviceable, more efficient, be given more prestige and power, either at present or by evolutionary processes in the future, by its combination with the proposed Department of Public Health? Would the veterinarian and his profession be strengthened? Would this sanitary work be more appreciated and his power advanced, or would it be smothered by the new suzerainty? We are keenly alive to advancement of the public welfare as far as our profession is concerned with sanitary measures at present operative or as they should be brought into operation with the process of time. Are we to be losers or gainers by the project contemplated? There is the rub, there is the debatable question.

D. ARTHUR HUGHES, Litt. M., Ph. D., D. V. M.

OAKLAND, California, March, 1910.

Editors of the AMERICAN VETERINARY REVIEW:

The local Committee of Arrangements, with your kind permission, desires to issue a warning to those who contemplate attending the next meeting of the American Veterinary Medical Association in San Francisco regarding the necessity of making hotel reservations at an early date. This necessity is due to the fact that the Native Sons of the Golden West celebrate the annual anniversary of the admission of California as a full-fledged State of the Union in San Francisco the same week as our meeting takes place. The significance of this fact is that San Francisco will have at least seventy-five thousand visitors, the majority of whom will be native sons and daughters, who make this gala occasion one to be remembered long after the Oslerization period has been reached and passed. One has to see in order to fully appreciate the enormous enthusiasm displayed by the native born during these annual gatherings.

As these celebrations are held in San Francisco once every ten years, and this is the first opportunity to observe the occasion in that city since the fire of 1906, extra and extraordinary efforts are being made for its success. In fact, the local Committee of Arrangements believes that the opportunity to witness this fete will be one of the most pleasurable incidents of the trip.

We consider that in viewing the doings and the people assembled in San Francisco upon Admission Day our eastern confreres will experience the shock of their lives, as far as their early teachings are concerned. False impressions undoubtedly still exist regarding the character of our native born sons and daughters. Pictorial atlases and other ichthyologic literature along these lines have variously depicted the California native son as a metallic-hued individual who promenades around with nothing to conceal his person from the modest observer other than a modified Chantecler headpiece and a chronic sunburn contracted from constant exposure to the daily effects of our western sun.

He has also been portrayed as an indolent piece of humanity clothed in a raiment second only to Joseph's Coat of Biblical fame in the matter of color, whose sole and most exhilarating occupation in life seems to consist in rolling cigarettes and relieving his weariness by leaning against a patient and more intelligent

looking burro while watching a native daughter resting upon her inferior extremities nearby engaged in pulverizing a handful of grain in a utensil simulating a mortar, the same to be incorporated later on in the construction of a tamale, enchilada or other calente food preparation of Mexican fame. But a glance at our native sons and daughters, September 9, will dispel all such false illusions and demonstrate that these specimens of mankind constitute the people and their offspring who have made the West what it represents to-day. People who show every symptom of an active, energetic, healthy, well-spent life and who from their conformation and personality would naturally be expected to do things. In fact, we hereby agree and covenant to demonstrate to all who are inclined to be incredulous that the natives of the Golden West, more especially of California, are far from being zeros with the rims torn off.

But what he started out to explain, Messrs. Editors, was that, in view of the great number of visitors in San Francisco during the week of our meeting, it behooves those who propose attending said meeting to make reservations at an early date.

The Committee of Local Arrangements, realizing the vital importance of making early reservations, beg leave to submit to your readers the following schedule as to headquarters, hotel rates, etc.:

HEADQUARTERS AND HOTEL ARRANGEMENTS.

The headquarters of the Association will be at the Palace Hotel, corner of Market and New Montgomery streets. This hotel is in the centre of the business district of the city, within a few minutes' ride or walk of all railroad and ferry depots.

The Palace Hotel offers the following rates:

Rooms for one person, with bath, \$2.50 per day; for two persons, with bath, \$4 per day; European plan.

The Hotel St. Frances, corner Geary and Powell streets, offers the following rates:

Rooms for one person, without bath, \$2 per day; with bath, \$2.50 per day. For two persons, without bath, \$3.50 per day; with bath, \$4 per day. Rooms with two beds and bath, \$6 per day. European plan.

Hotel Stewart, Geary street, near Powell street, offers the following rates:

Rooms for one person, without bath, \$1.50 per day; with bath, \$2 per day. Rooms for two persons, without bath, \$3 per day; with bath, \$3.50 per day. European plan.

Grand Hotel, on Taylor street, near Market street, offers the following rates:

Rooms for one person, with detached bath, \$1 to \$1.50 per day; rooms with private bath, one person, \$1.50 to \$2 per day. Two persons, without bath, \$1.50 to \$2 per day; with bath, \$2 to \$2.50 per day. European plan.

Grand Central Hotel, corner of Market and Tenth streets, offers the following rates:

Rooms, one person, without bath, \$1 per day; with bath, \$1.50 per day. Two persons, without bath, \$1.50 per day; with bath, \$2 per day. Two connecting rooms, with bath for two or three persons, \$2.50 per day; European plan.

Hotel Argonaut, Fourth street, near Market street, offers the following rates:

Rooms with detached bath, \$1 per day; rooms with private bath, \$1.50 and up per day; European plan.

There are many hotels located within a block or two of the headquarters.

Those wishing to reserve rooms may communicate with R. A. Archibald, chairman of the Committee of Local Arrangements, No. 1724 Webster street, Oakland, California, stating the kind of rooms they desire, or for any other information along these lines.

PLACE OF MEETING.

The meeting will open at 10 A. M., Tuesday, September 6, and the sessions will be held in the ballroom of the Palace Hotel, which is located on the ground floor, on the Jessie street side.

The Committee of Local Arrangements also beg leave to report that, through the indefatigable energy of Dr. S. B. Nelson, arrangements are being made to have a special train leave Chicago, the itinerary of which will, your good nature permitting, be submitted to your readers in the near future.

Respectfully,

R. A. ARCHIBALD,
Chairman Entertainment Committee.

LIVINGSTON, MONT., April 8, 1910.

Editors AMERICAN VETERINARY REVIEW, New York City:

If the Veterinarians making the trip from Chicago to San Francisco in September can be induced to go by way of the Northern Pacific and take in the trip through the Yellowstone National Park it will be a very pleasant and profitable side trip. The Park being located midway between the two terminals of the Northern Pacific it will be a convenient rest in the journey.

Yours truly,

A. D. KNOWLES.

KANSAS CITY, Mo., April 11, 1910.

To the AMERICAN VETERINARY REVIEW:

In the March number of the REVIEW there was published a prospective outline programme for the annual meeting of the American Veterinary Medical Association. At that time readers were urged to contribute toward the literary entertainment of the convention. No one has as yet responded. Within the same issue was an open letter from Dr. W. Horace Hoskins, suggesting the feasibility of Eastern and Middle States and provincial veterinarians and their friends assembling at a common centre to travel as a unit to San Francisco. This latter idea has been occupying our attention for a considerable time and we are now prepared to offer a proposition for an excursion from Chicago to San Francisco, leaving to the REVIEW readers and members of the A. V. M. A. to determine if these issues can be successfully worked out.

An excursion can be arranged for those contemplating attendance at the forty-seventh annual convention, thus: Leaving Chicago, Thursday, September 1, at 6 p. m., in special cars (a special train, should one hundred or more signify a determination to join the party), travelling over any direct line to Omaha, thence via Union and Southern Pacific lines, through Cheyenne, Ogden, Sacramento, and arriving at San Francisco Sunday, September 4, 7.28 p. m.; or, again, leaving Chicago, Thursday, September 1, 9 p. m., over the Rock Island and South-

ern Pacific lines (Golden State Limited), via Kansas City, El Paso, Los Angeles, and reaching San Francisco Monday, September 5, 11.40 a. m. The cost of either of the routes mentioned will be the same, viz.: Round trip fare, returning as individuals or in a body, by way of any direct route, prior to October 31, \$62.50; returning by way of a northern route, round trip, \$77.50. Pullman reservation is \$14 in either direction on the so-called direct routes.

Other ways that might be available under ordinary circumstances are prohibited in this instance because, firstly, tickets do not go on sale for this convention rate prior to September 1, and, likewise, because a greater time is consumed in transit, thus making the arrival at San Francisco too late for those wishing to attend committee meetings or the meeting of the Association of College Faculties and Examining Boards now planned for Monday afternoon, September 5.

This trip will enable those finding it possible to attend the great convention of veterinarians from Canada and the United States to pass through a portion of this country marvellously rich in natural resources, will be highly educational and will offer the one chance of a lifetime, at greatly reduced prices, to visit the renowned Golden Gate City on the shores of the Pacific.

Now then, readers, it is up to you. It is suggested that in order to make this excursion possible you immediately determine that you and your family will attend the convention; correspond at once with this office, stating your plans, signifying which route you prefer and agreeing to abide by a majority choice (you can return as you elect). I will then make definite arrangements with the lines selected, will advertise the plans sufficiently early to insure a clear understanding and a successful accomplishment of our purposes. You do not buy your ticket now, but simply give me a definiteness for my future actions. To start the bidding, if it has any attractiveness, the undersigned will engage to occupy at least one reservation out of Chicago. Who bids next?

If not having already transgressed too extensively upon your valuable space I will briefly enumerate, if permitted, the associations that have thus far appointed delegates. At a later date I hope to publish a full list of those officially selected to represent their local associations at the American Veterinary Convention. Thus far we have heard from the Minnesota State Veterinary Medical Association, Missouri Valley Veterinary

Medical Association, Ontario Veterinary Association, Manitoba Veterinary Association, California State Veterinary Medical Association, Society of Veterinary Graduates of Wisconsin, North Dakota Veterinary Association, New York State Veterinary Medical Society, Schuylkill Valley Veterinary Medical Association, Georgia State Veterinary Association, Colorado State Veterinary Association, Bureau of Animal Industry, Veterinary Inspectors' Association of Chicago, and Maine Veterinary Medical Association.

RICHARD P. LYMAN,
Secretary, A. V. M. A.

KANSAS CITY, Mo., April 14, 1910.

To the AMERICAN VETERINARY REVIEW:

POST SCRIPT TO MY FORMER LETTER.—Since mailing the above letter, the Passenger Associations have reconsidered their earlier ruling and conceded to place A. V. M. A. convention tickets on sale for a special train leaving Chicago August 31st, and going via Burlington route to Minneapolis, then to Billings, Seattle, and over Southern Pacific to San Francisco, reaching there the morning of September 5th. This special will require sale of one hundred tickets out of Chicago and may be one of the routes considered in making your selection. Round trip, \$77.50; Pullman, \$19.00 each way.

Yours very truly,

RICHARD P. LYMAN.

Editors AMERICAN VETERINARY REVIEW:

The Northwestern Ohio Veterinary Medical Association at their meeting February 15th, at Findlay, Ohio, unanimously elected Dr. R. C. Longfellow, of the Toledo Clinical Laboratory, Toledo, Ohio, clinical bacteriologist and pathologist to the association.

In so doing the association has secured the services of a well-known laboratory worker, whose services have been well recognized by the medical profession of northwestern Ohio and southern Michigan.

Dr. Longfellow has for the past eight months prepared autogenous vaccines for pus cases for our members, whose success with these biologic products have been most excellent. Poll-evil, fistula, quitters, any pus formations are now successfully and quickly healed by the bacterins made from the animal's own strain of causative bacteria.

We are glad to have a recognized laboratory worker, who is interested in our work, meet with us; can give any aid along the lines of laboratory pathology, microscopy, bacteriology, tissue specimens, and the many needs of the progressive veterinarians.

The Northwestern Ohio Veterinary Medical Association is one of the most progressive associations, its members actively pushing along research and biologic medicine hand in hand with our medical brothers, and our influence in public welfare is being recognized as never before.

A. J. KLINE, Secretary.

THE Delta Sigma Beta Fraternity at the United States College of Veterinary Surgeons, Washington, D. C., held its fifth annual banquet at "Raucher's" in that city on February 24th last on the sixteenth anniversary of the founding of the college. Among the guests of the fraternity were Dr. Harvey W. Wiley, Chief of the Bureau of Chemistry; Dr. William C. Woodward, chief health officer of the District of Columbia; Dr. J. J. Kinyoun, bacteriologist for the District of Columbia; Dr. Noble P. Barnes, professor of Materia Medica and Therapeutics at George Washington University; Prof. George A. Prevost, treasurer and attorney of the United States College of Veterinary Surgeons, and Dr. C. Barnwell Robinson, the dean of the college and professor of surgery and practice of medicine. L. B. Morris, exalted ruler of the Fraternity, was the toastmaster for the occasion. The members in attendance were Dr. M. Page Smith, Dr. C. C. Weeks, Dr. H. S. Gamble, Dr. Robert C. Talty, Dr. C. H. Bowker, L. B. Morris, exalted ruler; Edward C. W. Schubel, scribe and treasurer; C. Galiher, C. L. Hall, B. B. Flowe, C. D. Ashmore, C. L. West, H. H. Ladson, F. C. Herndon, C. A. Freyman, Wm. Moore, J. T. Shaw, J. R. Stifler, T. L. Casserly, O. W. Schubel, C. B. Simmons, T. L. Hamilton, T. H. Hungerford, H. R. Kelsey, R. B. Miller, J. A. Turlington, and J. J. Garvey.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

FRACTURES OF THE HUMERUS IN CATTLE [*Sidney Willar*].—Under this title the writer relates his experience with four cases of fracture of the humerus. The first on a sixteen months' old heifer which he advised first to be destroyed. But being warmly requested by the owner, six days later, to go and do the best he could for her, he found her so much improved, with less swelling, getting up and laying down without much difficulty that he "applied an adhesive plaster which was repeated after a few weeks." Recovery was perfect, leaving no external indication of the accident. A second case in which the fracture was easily perceptible, was treated in a similar manner with excellent results. A third animal, young Devon steer, had a similar condition and treatment, but the result was not so good; he was fattened and sold. Unfortunately the author does not say if the post mortem confirmed the diagnosis. In a fourth case, however, this was done. The animal was not treated. On inquiring what might be the cause of these fractures, the writer was brought to the conclusion that it was due to the fact that often young animals would "ride" each other when some among them are in oestrus, and being thrown or falling down would injure themselves.—(*Veter. Record.*)

TWO CASES OF FRACTURED CERVICAL VERTEBRAE IN HORSES [*R. Tindle, Lieut., A. V. C.*].—Both were the results of falling over fences on hard ground when the animals were moving at a comparatively slow gait. In neither was any pathological change found in the skeleton. The first animal was an aged horse which made a misstep in jumping a three feet high fence; he

fell on the head, which, acting as a pivot, made the horse turn completely over. There was no swelling or any external sign of a fracture and yet on post mortem it was found that the body of the third cervical vertebra had been broken into five pieces. The second animal met with a similar accident, falling dead on his side. On the left side and at the lower third of the neck, there was a swelling as large as an orange, and on dissecting the region there was found an oblique fracture of the fifth cervical vertebra in which the posterior part of the bone was crushed into eight pieces.—(*Veter. Record.*)

A CASE OF THROMBOSIS OF THE EXTERNAL ILIAC ARTERY [*J. Campbell, M. R. C. V. S.*].—The record of the case which manifested itself in the usual way and had in his history shown that in its present owner's possession for about a year, he had manifested no lameness nor any trouble, except that lately he had been taken with three attacks of colic. In this case the author points out that by making a rectal examination of the circulation per rectum, before the horse was taken out of the stable, he was very fortunate, as it assisted him to make the diagnosis of thrombosis.—(*Veter. News.*)

ASCITIS IN DOG [*H. A. Woodruff*].—Great Dane bitch had large swelling of the abdomen. Appetite is good, animal is somewhat constipated. Paracentesis is performed and 85 oz. of dark bloodstained fluid are removed. Treatment: sulphate of magnesia, nitrate of potash, extract of digitalis and purge. Four days later, the animal is bad again. She is tapped and relieved of one and a half gallons of fluid. Some is left in. The same treatment is continued. Within three days the remaining fluid began to be absorbed, the swelling of the abdomen gradually diminished and disappeared and in three weeks after the second tapping the bitch was quite well. The writer thinks that the treatment followed in this case, tapping once or twice, stimulating excretion of the kidneys and bowels with strengthening the heart will often do well.—(*Veter. News.*)

FRACTURES IN CATTLE [*W. Waters, M. R. C. V. S.*].—As these accidents in young cattle usually seem to unite readily, leaving the animal free from lameness and without deformity, would it not be worth while to attempt treatment not only with

these animals, but also with foals, colts, and especially the fillies with pedigrees. These remarks are advanced by the writer after relating two cases treated successfully. First case: Two-year-old steer had a comminutive fracture of the near metacarpal. Tow splints and long adhesive plaster are put on. In three weeks the animal puts weight on his leg; after six weeks he is free from lameness; only enlargement of the bone remains. Second case: Yearling bullock has a fracture of the off tibia just above the hock. Splints and bandages cannot be applied tight enough and to support them and strengthen the dressing a leather legging was applied over the hock and tibia. In five weeks the fracture was set perfectly, the bull was free from lameness and had no appreciable deformity of the leg.—(*Veter. Record.*)

STRONGYLUS ARMATUS [*T. G. Heatley, M. R. C. V. S.*].—The author has often noticed in foetal cases of colics arising from aneurism of the mesenteric artery caused by the strongylus armatus, that the rectal temperature was very high. So constantly so that he considers this as of great help and value in making out a diagnosis in cases of abdominal pains. The following is an illustration: A yearling colt which died after twelve hours of acute abdominal suffering had a rectal temperature one hour before death registering 108.8° F. The highest ever recorded in horses. At the post mortem the aneurism was found to be the size of a cocoanut. Large number of worms was present in the softened debris filling it. The double colon was completely covered with blood spots from the size of a pea downward. A similar spotted condition existed under the skin over the region of the loins and each side of the neck.—(*Ibidem.*)

FIBRO-LIPOMA ON THE FORE-ARM OF A COW [*Prof. D. Dey, G. B. V. C.*].—(*Bengal Vete. Coll.*)—Cow had a tumor on the left fore-arm with a discharging fistula. It began two years ago as a very small, wart-like growth, and now it is enormous. Cow is good milker but much emaciated on account of the bother and pain caused by the growth. Anesthesia and antiseptic precautions were first applied, tourniquet was placed on the leg and the whole of the tumor, which was lying between the flexors and extensors of the knee and foot, was dissected away through an elliptical incision made at its base. The wound was sutured

and boric acid dressing put on. With only a little fever the next day, the recovery offered nothing noticeable and took place by first intention. The animal improved rapidly in condition. The tumor, which was a fibro-lipoma, weighed nine and a half pounds.—(*Veter. Journ.*)

MAMMARY ABSCESS IN A COW [*By the same.*].—This animal had a large mammary tumour, hard and tense. It began a month before and grew larger. It consisted in a large abscess involving the two quarters of the right side. After disinfection, the whole diseased portion of the udder was removed, the wound cleaned, sutured, and boric acid with suspensory bandage applied. Creolin solution was freely used for cleaning the wound, which discharged quite freely. However, the cicatrization went on well and in two months and a half the animal was discharged. The tumour removed weighed sixteen and a half pounds.—(*Ibidem.*)

AMPUTATIONS [*By the same.*].—The first is on a ram which had a compound comminuted fracture of the right hind leg by having been run over. The amputation was made and the wound healed by first intention, allowing the removal of the sutures on the tenth day. The second case was in a young deer. He had a compound comminuted fracture of the right hind leg at the middle third of the metarsus. Recovery here took place in three weeks.—(*Ibidem.*)

LAPARO-HYSTEROTOMY IN A COW [*By the same.*].—Minute record of a Cesarian operation with successful results.

MONSTROSITY IN A HEIFER [*Ainsworth Wilson, F. R. C. V. S.*].—Relation of a case which was found after bleeding the mother to death: viz., a monster presenting the form of a schistosoma and resembling the *Schistocormus Reflexus* of Dr. Bruin's obstetrics.

SOME NOTES FROM PRACTICE [*G. Nayall, M. R. C. V. S.*].—Such as *Eversion* of the rectum in a sow: *Curious sequela of strangles*, viz., abscess round the ocular globe; *Pneumonia* following fistula of the withers, in which death occurred by complications of pneumonia and pleurisy; *Luxation of the eye ball*, re-

duced; *Extensive accidents, wounds; Recurrent eversion* of the uterus in a bitch.—(*Ibidem.*)

CURIOUS CASE IN A DOG [*J. F. Crag.*].—Cocker spaniel bitch had been ill since two or three weeks and was noticed ailing for the first time when coming out of the water. The attack came at intervals and lasted for days, when she was unable to remain still, would paddle with fore limbs and arch the back. Face and eyes were most anxious. She seemed most at ease when lying with the forelegs stretched out. She would suddenly cry out when walking or turning or going up or down stairs. The cry was most piercing, plaintive and prolonged, ending in a wail, and was repeated in quick succession. Temperature 102.6° F. No vomiting. She was treated for foreign body in the bowels or constipation, and also for rheumatism, with only temporary relief. As she was suffering with otorrhea, this was also attended to, and for a short while she seemed to be free from her trouble. Then she was given a bowlful of bread and milk, which she ate greedily. She then had pains and received bromides. After that she was put under an entirely liquid diet—milk, soup and tea. This was continued for a month. She remained in perfect health all along and has remained since. Was the trouble a foreign body in the alimentary tract or what?—(*Veter. News.*)

FRACTURE OF THE FIRST AND SECOND LUMBAR VERTEBRAE [*D. R. Chatterley*].—Failing to clear a ditch a four-year-old horse fell with his hind legs in the ditch. Having recovered after a short time he is walked partly home and shortly before arriving a lad is put on his back. Put in his stall, he is groomed and rubbed down. He then drops and is unable to regain his feet. Pulse and temperature are normal. Respiration is hurried. Sensation in hind legs absent. Rectal examination is negative. Anus slightly dilated, dock strong, no sweating. On the third day the horse gets very weak and is destroyed. Fractures of the first and second lumbar vertebrae are found. The displaced bones are pressing on the spinal cord. Probably the first condition of the fracture was without displacement. Did the weight of the lad increase it or did it cause extra muscular effort which separated the bones? Or was it simply the result of the moving about of the horse in his stall or in his lying down?—(*Veter. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

KNUCKLING IN COLTS—TENOTOMY OF THE PERFORANS TENDON [*Mr. Ch. Darmagnac, Army Veter.*].—If tenotomy of the perforans is generally serious in adults, it seems as if in colts it is deserving to be put more in practice. Four Arabian colts, between two and a half and four months old, all from the same stallion, have knuckling at the fetlock of the same leg, the right fore. They presented the same condition; the leg resting exclusively on the toe, the heels much raised, and although they were not lame, their actions were defectuous and irregular. These symptoms grew worse, and notwithstanding treatment, in three weeks the knuckling was such that the leg was resting with the anterior face of the foot on the ground, and the foot was such by the growth of the heels that it looked like a club foot. All treatment having failed, orthopedic apparatuses have given no results or could not be applied, tenotomy of the perforans is decided and performed with tenotomy knives with fine and very sharp blades. The little fellows had a shoe put on having long heels with little calks to them. A wadding dressing was applied, slightly tight, from the shoe up to above the knee. The results were excellent. Two of the operated colts having died several months after, the dissection of the legs show a perfect cicatrization of the divided tendons.—(*Rec. de Médec Vétér.*)

DROPSY OF THE ALLANTOID NOT DIAGNOSED IN A COW [*Mr. Th. Monod, Army Veter.*].—A week before her time, a pregnant cow, which has had a normal gestation, has eaten good all the time and been in perfect health all the while, suddenly refuses all solid food, no matter what is offered to her or what tonic medicine is administered. Carefully examined, nothing abnormal is detected. Her udder, however, which was beginning to enlarge, is arrested in its development. The calf is easily felt in the flank, and through vaginal exploration he is felt well and alive. After two or three days the abdomen has dropped and the cow began to lose flesh. At another vaginal examination the calf seems

weaker. It is decided to extract it. At the rupture of the chorion and allantoid, some 25 litres of allantoid fluid escaped, followed by 10 more as the amnios is lacerated. After some difficulty the calf is extracted alive, but he soon dies. As it was taken off the allantoid of each uterine horn was emptied of 20 or 25 litres of serous limpid fluid, making that altogether the envelopes contained between 75 and 80 litres of fluid. The dropsy of the allantoid gives the explanation of the trouble. The record is instructive for those that may meet similar conditions.—(*Recue de Méd. Vétér.*)

COLICS AND LYMPHANGITIS OF INTERNAL ORIGIN [*Mr. Perrin, Late Army Veter.*].—If lymphangitis of the extremities are not rare, the causes that give rise to them are often obscure. When one takes into consideration that splanchnic cavities and their organs are abundantly provided with lymphatics and that these are connected with the glands and vessels of the extremities, it is easily understood that some alterations of abdominal organs or simple functional disturbances may be accompanied with lymphangitis. One morning a horse is noticed uneasy, laying down and getting up; he scrapes the floor and soon has marked colic and tympanitis. These are not severe, yet the conjunctiva are very red, pulse slow and irregular, strong and quick, respiration accelerated. In fact he presents a general condition not in proportion with the colic. Preparations are about to be made to puncture the coecum and give him eserine and pilolarpine when the animal has an abundant diarrheic evacuation and is apparently relieved and he is taken back to his stall, presenting only a little stiffness on his hind legs. Two hours after, the right hind leg is found very sore and painful to the touch, it is swollen in its upper part, there is an acute attack of lymphangitis with the inner face of the thigh hot and very painful. It soon localizes itself to the hock. The treatment consisted of blistering and resolute frictions. The animal returned to work after 10 days. The writer has already had occasion to observe similar conditions in other cases and for him the manifestations of lymphangitis were due to microbial origin having taken place in the abdomen.—(*Reperto. de Poli. Sanit. Vétér.*)

HYPERTROPHIC CIRRHOSIS OF THE LIVER—BILIARY LITHIASIS [*Mr. E. Houdemer, Army Veter.*].—A mare nine years of

age has colic with brain manifestations. She has dull pains, no borborygms, no defecation, no tympanitis. She pushes her head against the wall of her stall, grinds her teeth and her lips are agitated with convulsive movements. A diagnosis of abdominal vertigo is made and the animal treated accordingly. Bleeding, cold applications to the head, pilocarpine, ammoniacal drenches, glycerine enemas, purgatives, puncture of coecum, etc., etc. No relief was given and after 10 days the mare died. After removal of the intestinal mass, the liver was exposed, attached to the duodenum by the choledoc canal, which is as large as the small intestine. In it there is felt a round, hard body as big as the fist, which is an enormous biliary calculus, greenish in color and weighing 230 grammes. The liver is hypertrophied, cirrhotic and weighing 15 kilograms. The divisions of the choledoc are dilated and packed with numerous concretions of various sizes and forms, some being as large as pigeon's eggs. They were made of concentric layers of biliary salts. After pointing out the conditions which might have helped in making a correct diagnosis and regretting that they were overlooked the author concludes: If the correct diagnosis had not served to save the animal at any rate it would have been more satisfactory to the attending practitioner. —(*Rev. Génér. de Méde. Vétér.*)

COLLOIDAL SILVER IN CANINE MEDICINE—TREATMENT OF ECZEMA AND DISEASES OF YOUTH [*Mr. E. Pignet*].—After a few remarks on the history and therapeutic properties of collargol the writer described the manner he uses it. He resorts to a solution of 1 per cent., which he injects sub-cutaneously or by intramuscular-way, for small animals. The external saphena vein is the one he prefers, or again the muscles of the thigh. The doses are between 2 and 5 C.C. of the solution, according to the size of the animal. Sometimes he makes an ointment which he applies to the skin.

For eczema, generally one injection is necessary, to obtain a radical recovery. In very few cases he had to give two and even three. In those cases the injections are made two days apart. Sometimes with the injection he applies externally compresses of the solution after washing the eczematous sores with boiled or boric water. In some instances instead of the compresses, he uses the ointment. No other internal or external treatment is required. In cases where the disease reappears again, the

treatment has to be followed again in the same way, the result will be the same.

Mr. Pignet has obtained excellent results with collargol in the treatment not only of eczema but also of auricular catarrh and of auricular chancre. Recovery has been the general rule, although several injections have had to be made in some few cases. The writer gives the records of a number of cases of those diseases and also of suppurating localizations among dogs and horses where he has obtained some wonderful results in short time; most ordinarily inside of 10 days.—(*Rec. de Medec. Veter.*)

TRAUMATIC SUB-CUTANEOUS EMPHYSEMA IN A HORSE
[*Mr. Plateau, Army Veter.*].—A horse received a kick on the inferior border of the neck. A swelling is formed. It is a contused wound, having the semi-circular form of the toe of a horse-shoe. Hairs and epidermis are off but the dermis is sound. The sub-cutaneous emphysema exists round the bruise only, but it soon spreads, reaches the throat, the lateral faces of the neck and the chest. Exploration of the trachea does not reveal any rupture of the tracheal rings. The swelling, however, gets larger, and although there is no fever and the horse seems but little affected with it, it has extended to the upper border of the neck, to the mane, goes beyond the posterior border of the shoulder and covers the point of the scapulo-humeral angle. Downwards it is limited by the inside of the forearm and upwards nearly to the masseters. Taking into consideration the condition of the animal, the danger of infection, etc., etc., it is decided to throw him and to cut down on the trachea and see what there is. An incision 15 centimeters long is made on the median line, along the inferior border of the neck, it allows the escape of a large quantity of air to pass out, and as the trachea is exposed, a small laceration is discovered between one ring and the ligament above it, and through which the air was passing from the trachea into the sub-cutaneous tissue. By careful massage a large quantity of air was made to escape through the cutaneous incision and a pulverized dressing of boric acid applied. From this moment the animal began to improve, the air made its exit outside and the emphysema gradually subsided.

The writer thinks it always advisable to operate early rather than to wait and run chances and risks, as one becomes at once

assured of the condition of the injury and besides guards against the possibility of suppuration, septic or gangrenous complications.—(*Rec. de Medec. Veter.*)

THREE CASES OF SURGERY ON BONES [*Mr. Redeu, Army Veter.*].—1. Horse received a kick on the inside of the radius, one hand breadth from the knee. Blister is applied, large swelling is formed, but as the horse is not lame, after three weeks he is returned to work. Soon, however, lameness becomes manifest. The swelling has become suppurating and there is a fistulous tract on its center. The horse was cast and after removing a piece of skin with the opening of the fistula in its center, the radius is exposed and found having two fistulas running in the medullary cavity. The radius is gouged out to make the two fistulas meet in one single groove, the necrosed structures are removed and the bony cavity which was left was filled with dressing of gauze. Suppuration was very abundant but the wound soon began to throw out healthy granulations, new bone was formed and cicatrization went on completed by the entire absorption of the induration on the radius.

2. A mare got kicked on the inside of the left hock, a little above the tibial tuberosity. She is very lame and suppuration is running freely. Probing reveals loose pieces of bone. The animal is thrown, incision of the skin exposes the tibia with two small pieces of necrosed bone. These are removed. There is also a spot which is undergoing necrosis but is still adherent to the body of the tibia. It is scraped off. The periosteum was carefully saved. Dressing with tincture of iodine. Complete recovery in one month.

3. A mare has, resulting from repeated blows and bruises, a fibrous induration of the right hind cannon bone. There is a fistula which runs down to the bone. With the animal down, an incision of the skin exposes the tract of the fistula to between the extensor tendon and the principal metatarsal. Surrounding connective tissue is necrotic and surrounded with reddish necrotic suppuration. The anterior face of the bone is scraped off, the necrosed tissues are removed and after compressive dressing with tincture of iodine and peroxide of hydrogen water the animal is left to rise. The wound was dressed often as the suppuration was abundant. There was no trouble in the cicatrization.—(*Rec. de Medec. Veter.*)

ITALIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

RARE LOCALIZATION OF ACTINOMYCOSIS IN A COW [*Dr. Ruggero Fracaro*].—A cow, aged eight years, had a tumor on the superior lip. It had the shape and size of a turkey's egg. In feeling it, it seemed to involve the entire thickness of the lip. Full of nodules, it was hard and slightly painful. Externally the skin was adherent to it and had an ulceration in one spot which was covered with a dry scab. On the inside of the lip, the mucous membrane was covered with numerous little nodules. During the removal of the principal growth, more of these nodules were exposed in the center of the mass and in the meshes of the tissues involved a center of softened caseous substance with yellow tufts was exposed in which by microscopic examination the tufts of actinomycosis were plainly made out and confirmed the diagnosis which had been made.—(*Clinica Veterinaria*.)

EXORBITAL PROLAPSUS OF THE LACRIMAL GLAND [*Same Author*].—This anomaly has not yet been described in veterinary works, says the author.

Since one month, a two-year-old heifer which has always been in good health, has upon the anterior face of the superior half of the ocular globes, under the palpebral border, a soft vesicular growth, which seems to hang from the conjunctiva and has the aspect of a hernia, elongated in the same direction as the ciliary opening. Rather fusiform, varying in size and being at times quite big and again small, it has a smooth surface and is of normal rosy color. This hernia seems to be bigger near the temporal angle and diminishes as it reaches towards the nasal. When the animal's head is left free, the protruding mass varies in size and form, and when the animal looks with eyes fixed, the lids open and the head elevated, the morbid condition is then more manifest. Then feeling it delicately, it is found of softish consistency, elastic and formed of granular tissue which can by pressure be returned under the eyelid and the orbital arch. The case was evidently one of prolapsus of the lacrimal gland. The author considers the various causes which might give rise to such accidents

and believes that in this case it was due to the deficiency and relaxation of the periglandular connective tissue attaching and supporting the gland on the superior part of the ocular globe and to the orbital arch.—(*Ibidem.*)

PNEUMECTOMY IN A DOG [*Doct. F. Quadrelli*].—In the space between the seventh and eighth ribs of the left side of the chest a dog received a punctured wound with a sharp knife. The wound measured seven centimeters and through it parts of the left lung is protruding. Four days later, the ectopied lung, soiled with the straw from the bedding, is in process of gangrene and the animal has a temperature of 41.3° C. In this condition it is useless to return the lungs into the thoracic cavity and the operation of pneumectomy was resorted to. After thorough disinfection of his hands and of those of his assistants and also of the injured region the lungs were gently pulled out and a strong catgut ligature applied upon a healthy portion of the organ. The prolapsing and diseased lung was then amputated as close as possible to the ligature. The stump was carefully returned in the thorax and the wound, closed with eight stitches, was dressed with strict antiseptic measures. After two or three days the dog was without fever, although weak and breathing with difficulty. In eight days all the stitches were taken off, the wound being perfectly closed. Somewhere after one month, the dog was well. His breathing remained a little short.—(*La Clinica Veterin.*)

VAGINAL HYSTEROTOMY [*Same Author*].—First the author records two cases where he performed it and extracted a living calf. In both cases the cow died. But neither from the operation. One carried a second foetus which was in bad position and could not be delivered. She was slaughtered two days after. The other died from septicemia.

The conclusions are: The operation of vaginal hysterectomy is not difficult nor dangerous, either for the mother or the foetus, if done in time and with the following attention during and after the operation. 1. Accurate disinfection of the hands, being careful that the nails be very clean, short and that no rings be on the fingers. 2. Disinfection of the tail, vulva and vagina with abundant antiseptic solutions, with irrigations with the same while the operation goes on. 3. Use a convex bistouri cache, like that of Malkmus. 4. Avoid incising the inferior wall of the uterine cervix so as not to injure the bladder or the ureters.

5. Complete the delivery by exploring again the uterus to see if there is not another foetus; if so extract it. 6. Every day after delivery disinfect the tail, vulva, anus and vagina.—(*La Clinica Veterin.*)

TRAUMATIC ABDOMINAL HERNIA [*Dr. Adolpho Luciani*].—A two-year-old colt is turned out in a field where a cow with horns inflicted on the right side of his abdomen an injury manifested by a swelling which is increasing gradually and soon is as large as a little boy's head. The swelling is not warm nor painful, but puffy like. It is reduced by pressure and then one can feel a rupture in the abdominal walls, 10 centimeters long and running obliquely from downwards upwards. Treatment by compression or by cauterization is not practicable and surgical interference is adopted. Chloroformization was assisted by first an injection of morphine and atropine. The parts were disinfected, the skin was incised, then the subcutaneous tissue and the hernial ring was exposed, formed by the lacerated aponeurosis of the great oblique, the fleshy portion of the small oblique and the transversal muscle. The intestines being well returned in place, to prevent their exit during the sawing, a piece of sterilized gauze was introduced in the abdomen and gradually withdrawn as the stitches were made. The transverse and small oblique muscles were sawed first, then the aponeurosis of the great oblique and finally the skin. Phenicated cleaning, collodion and ichthiol dressings. After six days the cicatrization was perfect.—(*Il Nuovo Ercolani*.)

PAPILLOMA OF THE URETHRA AND BLADDER IN A COW [*Prof. Garibaldi Lisi*].—Although in first class condition and apparent health this animal has recently manifested some little difficulty in urinating and the trouble has grown worse. At first she only had small streams and now the emission of the urine is difficult and very painful. In exploring through the vagina, the writer detected at the entrance of the urethra numerous small tumors with peduncles and attached to the mucous of the urethra. The introduction of a stiff oesophageal probang allowed to discover that these tumors extended also in the bladder, which was full of them. The cow was killed. The urethra and the bladder were covered with these tumors attached with peduncles to the mucous membrane and formed cauliflower-like growths which were bulging into the vaginal cavity to some extent. There were some at

the neck of the bladder and also on the superior face of the organ towards its base. The tumors did not exist in any other parts of the body, all the organs being in sound condition. Their papillomatous nature was confirmed with histological examination by microscope.—(*Il Nuovo Ercolani*.)

GERMAN REVIEW.

By JOHN P. O'LEARY, V.M.D.

REPORTS FROM THE NINTH INTERNATIONAL VETERINARY CONGRESS AT THE HAGUE, 1909, INTERNAL DISEASES [*Dschunkowsky*].—The author designates the Caucasus and Transcaucasus as the home of the blood parasitic diseases, which geographically, hydrographically, geologically and climatically present the most extreme diverse conditions that are favorable for the propagation of the various species of blood-sucking parasites. Fifteen varieties of ticks are recognized. Pyroplasmosis was described as affecting the sheep, goat, horse, ass, mule and dog; also experimental investigations, beside illustrations representing the parasites and infected portions of the body. For example, the tropical pyroplasmosis of cattle transmitted by the species of tick *Rhipicephalus decoloratus var calcarata*, the Texas fever caused by the large pear-shaped parasite and transmitted by the infected larva of the *Rhipicephalus calcarata*. As worthy of mention he cites the occurrence of pyroplasmosis in the hare and bat. In conclusion he remarks that the blood parasites contribute much to the enzootic disease among native cattle which appear usually in a chronic form. Acute cases are only observed in changed conditions in the manner of living.

Concerning Spirillosis Anserina. This disease was discovered by Dr. Sacharow in the year 1890. It is prevalent in the Northern Caucasus and Transcaucasus, where it claims equally as many victims as chicken cholera. The symptoms are weakness, sitting posture most of the time, inappetance, diarrhoea, emaciation, anæmia, paleness of the visible mucous membranes, especially the beak and webs of the feet. Pathological findings: liver

a reddish brown with yellowish points hyperæmic and much enlarged, interspersed with several large necrotic foci, spleen considerably enlarged and friable; its surface likewise dotted with necrotic foci; kidneys cloudy, swollen and yellowish, undergoing fatty degeneration. The pericardial sac contained a fibrinous exudate, ecchymoses on the epicardium; heart muscle undergoing fatty degeneration; enteritis spirochetæ were present in the intestines; they were easily discernible in the blood through microscopical examination. The spirochetæ anserina are fine wavy-like threads with pointed ends 6.86 to 15.01 microns in length and 0.21 micron in width; motile easily stained with fuchsin or gentian violet. After numerous investigations and discussions as to the curative measures and inoculation experiments, the author concludes that atoxyl is the only reliable therapeutic agent we possess for the treatment of this disease.

PROPHYLAXIS AND PATHOLOGY OF THE PROTOZON DISEASES (Report from the Ninth Veterinary Congress at the Hague, 1909, continued) [*Knuth*].—The author reviews the present status of the prophylaxis of the protozoon diseases. He proceeds as follows: Smith and Kilborne in the year 1890 discovered the cause of Texas fever in cattle, which they attributed to a pyroplasma. All tropical and subtropical countries are propagating centers of the pyroplasma of the domestic animals; perhaps also wild animals. Some species of the pyroplasm occur in temperate and cold climates. Ticks are always the carriers of the disease. The individual species of pyroplasma are transmitted by particular kinds of tick. Yet there are in the same species of domestic animals various types of pyroplasma. The pyroplasma occurring in animals is similar to the parasites of human malaria. In both groups of diseases stinging insects are a factor. In the human subject certain mosquitos; in animals certain ticks. These insects are the transmitters of living parasites, which live in and upon the red blood cells, and which destroy and dissolve the erythrocytes; within a few weeks the number of red blood corpuscles may be reduced from eight millions to one million and even less. As a result bile products increase enormously, the urine is tinged red, jaundice and anæmia are sequelæ. The malaria of man is combatted with quinine and the destruction of the mosquito, particularly the species anopheles. In the same manner the prophylactic measures against the pyroplasma, the trypanosoma and spirocheta must be carried out in the case of animals. A method

of treatment similar to that employed for the human subject has not been discovered for the treatment of animals. Experiments in the line of inoculations have not been reached; or at least no positive results have been obtained. Cattle which have contracted Texas fever can to a certain extent be protected against pyroplasmosis. Coal oil is effective for the destruction of ticks. The author described in detail the various methods employed which met with more or less success in the extermination of the tick.

PROPHYLAXIS AND PATHOLOGY OF THE PROTOZOON DISEASES (Report from the Ninth International Veterinary Congress at the Hague) [*Dr. Motas*].—After thoroughly describing the various methods of inoculation employed against pyroplasmosis, trypanosomiasis, the author recapitulated that the inoculations practised by Schröder, Francis and Hutcheon with a virus were not successful. The protective inoculation with an attenuated virus according to Schütz, Weber, Rossel and Meissner resulted in this, that the animals, sixty days after the inoculations were made upon them, could be exposed to natural infection without danger. Immunizing with pulverized ticks was unsuccessful. The serum derived from hyperimmunized animals (with the exception of dogs, which may be immunized for a time), has no effect on cattle and sheep affected with pyroplasmosis. Inoculating with a pure highly virulent virus mixed with bile gave satisfactory results. Preventive measures are destruction of the ticks, plowing and seeding for new pastures, enacting laws regulating the shipping of cattle from infected districts. The pathogenesis of pyroplasmosis is yet little studied. The incubation period extends over months. This stage is dependent upon the quantity and virulence of the pyroplasma. The parasites penetrate the blood corpuscles which rupture. The pyroplasma now thrive and propagate therein. They secrete toxins which produce fever and dilatation of the capillaries, sleepy sickness, and probably hæm-olysis.

THE PROPHYLAXIS AND PATHOLOGY OF THE PROTOZOON DISEASES (Reports from the Ninth International Veterinary Congress at the Hague) [*Dr. Penning*].—In the Lowlands of East India the following diseases occur: Trypanosomiasis, pyroplasmosis and psorospermiosis. Among the trypanosoma diseases which are pathogenic, he mentions the surra disease, which in

Africa is called nagana. This disease is without exception fatal to horses, mice, rats, dogs, cats, rabbits guinea pigs and monkeys, while buffalo, cattle, deer, sheep, goats and swine usually survive an attack and do not present any pronounced symptoms of disease when infected. Infection occurs through the sting of a diptera, a parasite which is found only in the open, and which belongs to the family Tabanidæ. Animals which are housed escape infection; for that reason the best method employed for the suppression of an epizootic is the confinement in houses or barns of all susceptible animals.

Dourine is the result of a trypanosoma which cannot be differentiated microscopically from those organisms which are responsible for surra disease. The parasite is found in the lymph, rarely in the blood. Infection occurs during copulation. Psorosis occurs in the flesh of all food-producing animals, more particularly in the buffalo. These parasites produce no clinical symptoms of disease in the host. They appear in the form of the well known elongated bodies; sarcosporidan cysts which are filled with half moon shaped bodies. The use of the meat which is infested with these cysts is innocuous. An intramuscular injection of the contents of these sarcocysts is fatal to guinea pigs and rabbits. The history of the development of the parasite is unknown.

PROPHYLAXIS AND PATHOLOGY OF THE PROTOZOON DISEASE (Report from the Ninth International Veterinary Congress at the Hague [*Prof. Bey*].—Concerning pyroplasmosis, the author mentions three forms occurring in cattle; he also speaks of pyroplasmosis in the horse in Northern Africa and of a repeated outbreak of a fatal canine pyroplasmosis in India and Egypt. With regard to trypanosomiasis, the author maintains that our knowledge of this disease among camels has materially increased. The three forms found in the camel which are due to the trypanosoma evansi, the cause of surra, are M'bori, d'el Debab, and Zufana. The Gambian disease of the horse is attributed to the trypanosoma dimorphon; it is prevalent over the interior of tropical Africa. It is evident that the glossina cultivates the excitor, which can develop enzootic centers of trypanosomiasis. The mosquito's stomaxen infect directly or indirectly; they cannot develop an enzootic form of the disease.

THE PROPHYLAXIS OF THE PROTOZOON DISEASES (Report from the Ninth International Veterinary Congress at the Hague)

[*Dr. Theiler*].—The most important tropical diseases in South Africa may be classed in the following manner:

A. The diseases transmitted by insects (mosquitos, flies).

(a) Trypanosomiasis.

(b) Ultramicroscopical Vira.

B. The diseases transmitted by ticks.

(a) Piroplasmosis.

(b) Spirochaetosis.

(c) Ultramicroscopical Vira.

Among the various species of trypanosomes in South Africa, the following are the principal: *T. brucei*, *T. evansi*, *T. cazalboni*, *T. Sudanense*, *T. nanum*, *T. pecaui*, *T. dimorphon*, *T. Congolense* and *vivax*. These forms are transmitted either by the glossina or blood sucking flies. Prophylaxis requires the removal of animals from the infected area. The disease may be prevented by destroying the infecting flies. In certain forms of trypanosomiasis the wild animals must be exterminated and all brush wood and coarse reedy vegetation must be cut down and cleared away. The importation of animals from infected districts must be forbidden. The ultramicroscopical vira is the source of the fatal horse sickness in Africa and the blue tongue which is probably caused by a mosquito; however proof of this has not been brought forth. All forms of pyroplasmosis are the result of infection through ticks, and which may be transmitted artificially, with the exception of the pyroplasmosis caused by the *trypanosoma parvum*. In all artificially produced cases of pyroplasmosis, the immunized animals are capable of infecting. The same applies in the case of spirochaetosis. Heart water (*ultramicroscopical virus*); the immunized animal is not capable of infecting. First, we must inoculate the animal to obviate infection, in which case the animal must be removed to a distance from the infected district (only possible when the immunized animal is not capable of infecting (*East Coast Fever*, *Heart Water*); second, by starving the ticks the disease is eradicated.—(*Osterr. Monatschrift für Tierheilkunde*, 34 Jahrg. No. 11, 1909.)

AVINE TUBERCULIN AS A DIAGNOSTIC AGENT IN CHRONIC PSEUDO-TUBERCULOUS ENTERITIS OF CATTLE (Johnes Disease) [*Vet. O. Bang*].—Chronic pseudo-tuberculous enteritis of cattle is a widespread disease due to an acid-fast bacillus which has been discovered within the last few years, and very closely resembling the tubercle bacillus. Prof. B. Bang, of Copenhagen,

proved that the disease is chronic and infectious. Healthy cows became infected when fed with pieces of intestinal mucous membranes of cattle affected with the disease. Animals which contract the disease become extremely emaciated, and in many cases a severe diarrhoea is a concomitant. The pathological anatomical lesions are limited exclusively to the intestinal canal and mesenteric glands. There is a diffuse thickening of the mucous membrane and frequently also of the submucosa. Ulcerations or cheesy or calcified processes are observed only then in the intestines, when, besides pseudo-tuberculous enteritis, tuberculosis is present, otherwise never.

The extent and malignity of this form of enteritis in cattle in Denmark may be estimated from the amount of money paid as indemnities by insurance companies for animals which succumbed or were killed on account of the disease, the sum paid for one year being 29,000 m. Cattle which are suffering from pseudo-tuberculous enteritis do not react to injections of tuberculin, even when doses of 20 grammes of the ordinary tuberculin is injected. Olaf Bang had just undertaken experiments on cattle affected with pseudo-tuberculous enteritis in order to determine the effect of injections of tuberculin prepared from avine tubercle bacilli. The results were that the injections of avine tuberculin on cows so affected was accompanied by a hyperthermia, reacting in the same manner as a tuberculous cow injected with ordinary tuberculin. In the demonstration of avian tuberculin Bang in preparing his tuberculin employed eight three to four-months'-old avine tubercle strains which had been grown on the surface, and all derived at the same time from tuberculous poultry. The individual doses for a cow hypodermatically of the avine tuberculin varied between 75 cg. and 2 grms. It was hoped that by means of the avine tuberculin it would be possible to combat the pseudo-tuberculous enteritis of cattle, particularly to establish a diagnosis in the earlier stages through this method of inoculation. Hence the difficulty arises that in tuberculous stables the cattle which are already tuberculous, may react to avine tuberculin. In such cases we can only prove that the reacting animal has either tuberculosis or pseudo-tuberculous enteritis or both. A more accurate diagnosis may be obtained regarding the nature of the disease through the ordinary tuberculin test or the ophthalmo reaction. In this way both diseases may be eradicated at the same time by separating the reacting from the healthy animals. The supposition that the pseudo-

tuberculous enteritis of cattle is perhaps caused by the avine tubercle bacillus is doubtful, because hens resist to a very high degree feeding and inoculation with infected material taken from cattle suffering from pseudo-tuberculous enteritis, and because true tuberculosis can be produced in cattle by feeding them with avine tubercle bacilli.—(*Zentralblatt für Bact., n. s. w.*, 1909, 1 Abt. orig. bd. 51, S. 450.)

MODIFICATION OF SOUTHERN CATTLE QUARANTINE.—The Secretary of Agriculture has issued an order, effective April 1, releasing from the federal quarantine for Texas fever or tick fever of cattle certain areas amounting to over 48,000 square miles. This action is taken as a result of the good progress made in the extermination of ticks which spread the disease. The territory released is as follows:

In California, the counties of Fresno, Tulare, Ventura, Los Angeles, San Bernardino, Riverside, and a portion of San Luis Obispo County.

In Texas, the counties of Borden, Glasscock, Upton, Crane, and portions of the counties of Pecos and Terrell. Privilege for movement on inspection from the counties of Wilbarger, Baylor, and portions of the counties of Hardeman, Foard, Knox, and Haskell is revoked.

In Oklahoma, portions of the counties of Noble, Payne, Cleveland and Jackson. Privilege for movement on inspection is provided for portions of the counties of Lincoln, Cleveland, Caddo and Jackson, and revoked for a portion of Kay County.

In Arkansas, the counties of Benton and Washington.

In Mississippi, the counties of De Soto, Tate, and Tunica.

In Tennessee, the counties of Bradley and James.

In Georgia, the counties of White, Habersham, and Stevens.

In Virginia, Brunswick County.

The total territory freed of ticks and released from quarantine since the beginning of the work of tick eradication in 1906 aggregates about 130,000 square miles, or an area nearly half the size of the State of Texas.

The recent order also prescribes regulations for the territory remaining in quarantine. Copies of this order may be obtained on application to the Bureau of Animal Industry, Department of Agriculture, Washington, D. C.

SOCIETY MEETINGS.

NORTH DAKOTA VETERINARY MEDICAL ASSOCIATION.

The eighth annual meeting of this association convened in the recitation room of the Veterinary Department of the Agricultural College at Fargo, N. D., January 18, 1910, at 9 a. m., with temporary chairman C. H. Babcock in the chair.

Roll call showed twenty-seven members present and the following distinguished visitors: Dr. W. L. Williams, Cornell University, New York; Dr. S. H. Ward, State Veterinarian, St. Paul, Minn.; Dr. F. Falconer, Alexandria, Minn.; Dr. C. D. Harris, of the A. C. Faculty, Fargo, N. D., and a number of veterinary students from the Fargo Agricultural College.

Minutes of the last meeting were read and approved.

There being no unfinished business of any importance, the several committees reported, applications for membership were received and acted upon, and the election of officers proceeded with, which resulted as follows:

President—C. H. Babcock, New Rockford, N. D.

Vice-president—J. W. Robinson, Garrison, N. D.

Secretary—C. H. Martin, Valley City, N. D.

Treasurer—B. C. Taylor, Hillsboro, N. D.

The meeting then adjourned until 1.30 p. m., when, under the head of "New Business," motion was made by W. F. Crewe, seconded by E. J. Davidson, that the association instruct the Legislative Committee to amend the statute, reducing the license of practising veterinarians from \$3.00 to \$2.00 per annum; also to amend the statute, increasing per diem of the examining board from \$3.00 a day and expenses to \$10.00 per diem and expenses, to be presented at the next session of the legislature. Carried.

Moved by Davidson, seconded by Taylor, that the same committee solicit a report of the secretary of the State Examining Board. Carried.

Moved by Martin, seconded by Dunham, that the association instruct the president to appoint delegates to the next annual

meeting of the American Veterinary Medical Association. Carried.

Moved by Davidson, seconded by Winsloe, that all members in arrears for association dues be notified by the secretary. Carried.

Moved by Benson, seconded by Jackson, that the secretary be instructed to get printed by-laws of the association, and forward same to each member. Carried.

The reading of papers was then taken up as follows:

"The Application of the Mallein and Tuberculin Tests," by W. F. Crewe.

This subject was very interesting and instructive, the author placing considerable reliability on person making tests, ability to recognize constitutional disturbances, etc. He recommends the apththalmic method, especially if the subcutaneous method had been used within thirty days previously for fraudulent purposes.

Discussion by Drs. Williams, Davidson, Farley, Van Es and Anderson, which revealed cases of carelessness, incomplete and doctored charts and failure to report result of tests to the proper authorities.

Moved by Babcock, seconded by Dunham, that the association express a wish that each member report in full and account for all material to the North Dakota Serum Institute. Carried.

"Prolapsus Ani," by C. H. Babcock.

This was a very interesting paper, the author describing his methods of operation.

Discussion by a majority of the members present.

"Pathological Horseshoeing and Balancing," by J. E. Carter.

The author described leveling and preparation of the foot for the shoe, and described various shoes used in treatment of lameness, etc.

Discussion by several of the members.

"Colibacillosis," by L. Van Es.

This was a very interesting subject, and a very important one, as was shown by the lengthy discussion following being participated in by a majority of the members present, Dr. Williams citing where in New York state this disease alone causes an enormous loss to the dairy interests.

"Oophorectomy," by Ernest Schneider.

This paper was very interesting and instructive, the doctor describing the various methods of operation on the different animals. Discussion by all the members.

Dr. J. W. Robinson reported several cases of glanders and farcy, and results of the mallein test on same. Discussion by Drs. Davidson, Crewe, Walsh and Van Es.

C. H. Martin reported a case of Prolapse of the Intestines Following Castration, describing his method of reducing and the maintaining of same in the abdominal cavity.

Discussion by Drs. Williams, Seed and Van Es.

Dr. F. L. Cusack reported several cases of choke and the good results he had obtained from the hypodermic use of arecoline. Discussion by several of the members.

Dr. J. W. Jackson reported results of a post mortem on a hog and exhibited specimen of tubercular lesions. Discussion by a majority of the members.

The meeting then adjourned until the following day at 9 a. m.

At 8.30 p. m. all assembled at the banquet hall of the Hotel Gardner, where covers were laid for 40, and a sumptuous repast was served jointly with the Live Stock Association. After the cigars were lighted Toastmaster De Lancy called on Col. Wilson, of the stockmen, who gave a talk on "Types of Breeds," comparing the northern with the southern breeds.

Toastmaster Van Es introduced Dr. W. L. Williams, and in response for the veterinarians gave a talk on "Quacks and Quackery," as related to the interests of the profession and to the live stock interests.

President Worst, of the Agricultural College, gave a very interesting talk on live stock, college work, etc.

Meeting called to order at 9.00 a. m. by President Babcock, asking the pleasure of the members.

It was moved by Anderson, seconded by Walsh, that we proceed with paper of Dr. Williams. Carried.

Dr. Williams read a paper on the castration of cryptorchids, giving his methods in the various phases of the operation, both in the normal and abnormal conditions as they were found. This paper was conceded as one of the very best ever produced on this subject and a general discussion followed by all the members.

President Babcock then called on Dr. S. H. Ward, State Veterinarian of Minnesota, who gave us a very interesting talk on contagious diseases, mentioning some of the unprofessional and fraudulent work done in mallein and tuberculin testing received from various states, citing several cases where a retest showed typical reactions.

Dr. Van Es then stated that he had procured three cryptorchids for the clinic, and advised the members that one was for sale which could be bought for \$60.00. The hat was passed and the amount collected in a very few minutes.

The members then adjourned in a body to the operating room, where a three-year-old cryptorchid was already on the table and under the anæsthetic. Dr. Williams proceeded with the operation, withdrawing the vas deferens through the inguinal ring enclosed in a fold of the peritoneum, which he secured in that position with forceps, and each member who wished made an exploration of the parts. The animal was then destroyed, the abdominal walls laid back, viscera removed, when the testicle could be seen in the pelvic cavity.

At 2.30 the meeting was again called to order by the president.

Moved by Van Es, seconded by Crewe, that a vote of thanks be extended to Dr. Williams. Carried (rising vote).

Moved by Schneider, seconded by Farmer, that copies of Dr. Williams' paper be sent by the secretary to the AMERICAN VETERINARY REVIEW and the *Missouri Valley Veterinary Bulletin*. Carried.

Moved by Taylor, seconded by Farley, that the Institute feature be continued another year. Carried.

Moved by Crewe, seconded by Schneider, that \$125, or as much as be necessary thereof, be appropriated for the use of the Institute Committee for the next year. Carried.

Moved by Simmons, seconded by McDonnell, that the next annual meeting be held at Fargo, N. D., beginning on Wednesday of the same week as the Tri-state Grain Growers' Convention. Carried.

Moved by Dunham, seconded by Farley, that the first day of the meeting next year be held down town under the auspices of the Banquet Committee. Carried.

Dr. Van Es notified the association that Dr. Williams would further demonstrate his operation on two cryptorchids in the forenoon of the following day, to which the entire association agreed to attend.

President Babcock then announced the appointment of his committees for the ensuing year.

After notice of a social meeting at 5 p. m., the meeting adjourned until the next meeting, subject to call of the secretary.

C. H. MARTIN, Secretary.

GENESEE VALLEY VETERINARY MEDICAL ASSOCIATION.

The Thirteenth Annual Meeting of this association was held at the Rochester Club House, Rochester, N. Y., on Friday, January 7, 1910. Twenty-two members responded to the roll-call, also the following visitors: Doctors Hollingworth, of Utica, president of our state society; H. E. Turner, of Lyons; Dr. Chase, of Rochester, N. Y.

President J. E. Smith gave an address and spoke of the friendly feeling among our members and urged on all the necessity for strengthening this feeling, so that we would always treat a competitor as a brother, thereby commanding the respect of our clients and strengthening our social standing by so doing.

The following were elected directors for the ensuing year: Doctors J. E. Smith, A. George Tegg, Warren E. Stocking, W. G. Dodds, H. S. Beebe, G. E. Kesler, O. B. French, J. H. Taylor, F. E. Cleaver, and L. R. Webber.

The following were elected as officers of the association:

President—F. E. Cleaver.

Vice-president—L. R. Webber.

Secretary—J. H. Taylor.

Treasurer—A. G. Tegg.

Censors—J. E. Smith, Warren E. Stocking, W. G. Dodds, H. S. Beebe, G. C. Kesler, and O. B. French.

After lunch the meeting was called to order by the newly-elected president, Fred E. Cleaver, and the following resolution passed, amending our constitution:

Resolved, There shall be added to Article XI. the following, to be known as Section V. of Article XI.: Any legally authorized practitioner of veterinary medicine and surgery in good standing, residing outside of the counties of Monroe, Livingston, Ontario, Wayne or Orleans, may become an associate member of this association by proceeding in like manner as in Section II. of Article XI. He shall pay the same initiation fee, and the same dues and assessments, and be subject to the by-laws and entitled to all the privileges of the association except voting or holding office.

The Board of Censors reported favorably on the applications of Alfred Tuxill, of Auburn, and R. Perkins, of Warsaw, for election as associate members. They were elected.

Doctors H. S. Beebe and John O. Moore each read short, pithy papers on "Grease Heel," which were followed by a spirited discussion, which brought out the fact that the most successful treatment was the application of hot antiseptic poultices or packs, followed by astringents in glycerine or olive oil.

Doctors A. Geo. Tegg and J. W. Corrigan read papers on "Purpura Hæmorrhagica," and the discussion was opened by Doctor Stocking reporting a case in his own practice. A spirited discussion followed these papers, participated in by Doctors Tegg, Kester, Moore, Taylor, Corrigan, Webber and Johnson.

Doctors W. J. Payne and J. E. Smith each gave short talks on "Agoturea and Its Treatment." These talks brought out a lengthy discussion. The men who treated their cases by keeping the animals quiet by both care and treatment seemed to get the best results. Never urge a horse to get up until he is able to stand.

The question box was then opened and proved an interesting and instructive part of the program.

Dr. Tegg reported on the cases operated on at our July meeting. The cases all did well, excepting the gray horse with the tumor on his shoulder. This proved malignant and did not recover.

Doctor Hollingworth entered the hall at this time, and was given an informal reception. He was introduced to each one present. The meeting adjourned at this time for dinner, which was given by the association. Twenty-four sat down to the table at six o'clock.

After dinner the meeting was called to order and Doctor Hollingworth was introduced as the speaker. He congratulated us on having such a harmonious and progressive association. He said Rochester was known as a city of clean milk and that was why he had appointed Doctor Tegg as a member of the Clean Milk Committee of the state society. He spoke of the necessity for state meat inspection, establishment of central slaughter houses, under the control of inspectors, veterinary surgeons being the logical sanitarians.

The following resolution was passed:

Whereas, It has come to our knowledge that only about one-third of the meat consumed in this state is inspected, and that many of the slaughter houses at which the remaining two-thirds is slaughtered are unsanitary, be it

Resolved, That we ask the legislature to enact such laws as are necessary to establish proper and thorough inspection of all

meat slaughtered in the state, also that central abbatoirs be established to facilitate such inspection. And that said inspection be done by competent veterinary surgeons under the Bureau of Veterinary Service of the Department of Agriculture.

Prof. V. A. Moore was elected an honorary member of the association in recognition of his work for the veterinary profession.

J. H. TAYLOR, Secretary.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

The regular quarterly meeting of this association was held at Einstein's Hall, Fresno, California, on Wednesday, March 9, 1910.

The meeting was called to order at 10.30 A. M. by the president, Dr. David F. Fox, of Sacramento.

Owing to the absence of the secretary, Dr. J. J. Hogarty, the president appointed R. A. Archibald as secretary pro tem.

Roll call showed the presence of the following members: Drs. J. F. Ast, James Boyd, L. A. Covell, W. F. Betzold, Geo. Gordon, Frank Griffith, Chas. Keane, W. W. Thomas, B. D. Holt, C. M. Haring, W. A. Seabury, L. A. Tuttle, P. H. Browning, L. A. Danielson, Chas. Sears, J. P. Iverson, E. J. Creely, R. A. Archibald, D. F. Fox, Otis A. Longley, T. L. Dardis, Geo. S. Rey, F. E. Twining and A. J. Sorensen.

The following visitors were present: Drs. B. Williams, Geo. Edwards, B. F. Ellis, and Wm. S. J. Strauss, editor of the *California Live Stock and Dairy Journal*.

Minutes of the previous meeting were read and approved as read.

Under the head of reports of Board of Examiners and Committees, the Board of Examiners reported favorably upon the applications of Drs. W. J. C. Ramsay, B. D. Holt and George C. Taylor. The report upon motion was accepted and placed on file.

Dr. R. A. Archibald as chairman of the Committee on Entertainment of the A. V. M. A. reported progress. He stated that complete arrangements had been made as far as headquarters, hotel accommodations and a place of meeting were concerned. He

urged the members to look out for and locate suitable cases for clinical demonstrations. He also urged the members to send in their subscriptions as soon as possible in order that the Committee might know at an early date just how much funds would be available. The report was received and the committee given further time.

The following applicants applied for membership in the Association:

Dr. L. A. Tuttle, San Francisco, graduate of the San Francisco Veterinary College.

Dr. Geo. S. Rey, Dinuba, graduate of the San Francisco Veterinary College.

Dr. A. J. Rydberg, San Rafael, graduate of the San Francisco Veterinary College.

Dr. A. R. Asbill, Eureka, graduate of the San Francisco Veterinary College.

Dr. Chas. H. Sears, Bakersfield, licentiate.

Dr. W. A. Seabury, Coalinga, Grand Rapids Veterinary College.

Dr. W. W. Thomas, Merced, Western Veterinary College.

The same having paid their initiation fees, their applications were referred to the Board of Examiners to be reported upon at the next meeting.

Under the head of Admission of New Members, the following were duly elected to active membership:

Dr. W. J. C. Ramsay, graduate of the San Francisco Veterinary College.

Dr. B. D. Holt, graduate of the San Francisco Veterinary College.

Dr. George C. Taylor, graduate of the San Francisco Veterinary College.

Under the head of New Business, the secretary read a communication from Dr. Lyman, secretary of the A. V. M. A., requesting the association to elect delegates to the 1910 meeting in San Francisco.

Upon motion, duly seconded and carried, the president appointed the following delegates to the meeting of the A. V. M. A.: Drs. R. A. Archibald, H. H. Hicks, Chas. Keane, H. A. Spencer and C. M. Haring.

A communication was also read from Dr. H. A. Spencer regretting his inability to attend the meeting and urging upon the members the necessity of assisting the Entertainment Commit-

teen in every way possible in order to make the A. V. M. A. meeting the most successful in its history. The letter evoked much applause.

The following bills against the association were presented: J. J. Hogarty, letter heads, circular letters, postal cards and stamps, \$10.85, and O. A. Longley, rent of Einstein's Hall, \$7.50. The same being found to be correct, upon motion duly second and carried, warrants were drawn on the treasurer for the several amounts.

The hour of 12 M. having arrived, the meeting upon motion adjourned to meet in the afternoon at 2 P. M.

The meeting reconvened at 2 P. M. President Dr. David F. Fox in the chair.

The reading of papers and discussions were taken up.

Under this head Dr. P. H. Browning, of San Jose, was called upon and responded by reading a very interesting paper dealing with the various intellectual and entertainment features of the coming meeting of the A. V. M. A. He urged the members to bring their wives and other female relatives and to come prepared for the time of their lives, as he was willing to give a personal guarantee that there would be something doing all the time.

Dr. R. A. Archibald, of Oakland, addressed the meeting upon the subject matter of "Passive Hyperæmia as a Therapeutic Agent." The address was followed by a brisk discussion, which nearly all present joined.

The subject matter of glanders was brought up and was discussed by Drs. Keane, Iverson, Fox, Haring, Boyd, Holt and others, and in this discussion Dr. Archibald was requested to talk upon the mallein reaction and the many peculiar features incidental thereto. Dr. Archibald responded by discussing in detail the nature of mallein and tuberculin. The peculiarities of the pathological changes that were produced by glanders and tuberculosis and the reasons why mallein and tuberculin did not produce reactions in healthy animals or recent reactors and why they did produce reactions in diseased individuals.

Dr. A. J. Sorenson, of Modesto, then read a very interesting and instructive paper upon "Granular Venereal Disease of Cattle, Sometimes Called Vaginal Catarrh or Infectious Vaginitis." The paper was followed by an exceedingly interesting discussion in which nearly all present participated. The discussion brought forth the fact that there was great need of a thorough investigation of this cattle scourge and it resulted in a motion authorizing

and instructing the president to appoint an investigating committee whose duty it will be to investigate this disease and make a report at the next quarterly meeting.

The president appointed Drs. Haring, Longley, Sorenson and Boyd.

The time for adjourning being at hand, the president called for a report from the Committee on Arrangements to make suggestions as to the next place of meeting. Dr. Browning invited the members to meet in San Jose and Dr. Haring extended an invitation to meet at Davis at the Experimental Farm. Upon putting the matter to a vote, Davis was unanimously selected as a place of meeting.

The president appointed the following as essayists for the next meeting: Drs. Haring, Creely, Ast and Archibald.

There being no further business to come before the association, upon motion duly seconded and carried, it adjourned to meet in Davis on the second Wednesday in June, 1910.

CLINIC.

Prior to the meeting a very interesting clinic was held at Dr. Otis A. Longley's Hospital, during which a number of interesting cases were presented for diagnosis. One of the most interesting cases was a large draught stallion presenting what was supposed to be a tumor of Bursetta origin hanging from the abdomen just in front of the naval, and weighing in the neighborhood of 40 to 50 pounds.

Dr. Edward J. Creely operated upon a mule affected with contracted tendons, and Dr. R. A. Archibald demonstrated a Quitor operation.

R. A. ARCHIBALD, Secretary *pro tem*.

B. A. I. VETERINARY INSPECTORS' ASSOCIATION OF CHICAGO.

The regular monthly meeting was held April 8, 1910, at 8 p. m. The meeting was well attended and most of the members present took active part in the discussion of the papers presented.

On behalf of the Animal Food Hygiene Committee, Dr. H. D. Paxson read a very interesting paper on "Meat Poisoning."

Dr. G. E. Maxwell read an instructive paper on "Immunity." In the discussion which followed, these questions are a few of those which arose:

1. Why are men not more often infected with tuberculosis on the killing floor?
2. Why is the deep bay horse used in the production of serum?
3. How is immunity to Texas Fever maintained?

Dr. J. Myers and Dr. Max Siereveld were admitted to active membership. Mr. A. H. Roop, chief chemist for the Chicago Division of the Bureau of Animal Industry was admitted to Honorary Membership.

Adjournment was agreed upon at 11 p. m. The next regular meeting occurs on the eve of the second Friday in May.

H. A. SMITH, M.D.V., Secretary-Treasurer.

ALUMNI ASSOCIATION, NEW YORK-AMERICAN VETERINARY COLLEGE.

The regular annual meeting of the Alumni Association of the Veterinary Department of New York University was held in the college building on Wednesday, April 20, 1910, at 3 o'clock p. m. The president, Dr. T. Earle Budd, in the chair. A fair attendance of members was present.

The roll-call being dispensed with, the minutes of previous meeting were read and approved.

The matter of dues and collections was discussed, and upon motion the secretary was instructed to notify each member of the association that all back dues were cancelled and all members were in good standing to the close of the year 1909. The secretary was also instructed to mail each member of the association a bill for dues, dating from January 1, 1910.

The executive committee reported that the annual banquet of the Alumni Association, to be held at Reisenweber's at 7 o'clock in the evening, would have the largest attendance of any in the history of the association.

Library Committee reported progress.

Treasurer's report of balance of \$10.00 was accepted, and upon motion, the secretary was instructed to communicate with Dr. L. L. Glynn, the outgoing secretary, and ask him to forward amount of treasury account.

The class of 1910, upon motion, was admitted to membership as a whole, upon complying with the by-laws of the association.

Election of officers resulted as follows:

President—Dr. R. S. McKellar.

Vice-President—Dr. W. C. Miller.

Secretary—Dr. J. F. Carey.

Treasurer—Dr. H. F. Harms.

Under the head of New Business the matter of appointing a delegate of the Alumni Association to attend the forty-seventh annual meeting of the American Veterinary Medical Association, to be held in San Francisco, California, on September 6, 7, 8, 9, 1910. Upon motion Dr. L. L. Glynn was appointed a delegate to represent the Alumni Association at said meeting.

The subject of certificates for members of the Alumni Association was discussed thoroughly, and upon motion the secretary was instructed when sending bill for dues to add 50c. to help defray the cost of certificate, explaining same to members, and when there was available funds in the treasury, the certificates will be sent to each member.

Upon motion meeting was adjourned.

The banquet was a decided success, having a larger attendance than any held for a long period. Many fine addresses were listened to with great pleasure.

J. F. CAREY, Secretary.

THE Colorado State Veterinary Medical Examining Board will hold a summer examination June 3 and 4, 1910, for graduates who wish to obtain a licence to practice in that state. The examinations will be held at the Capitol, Denver, Colo. Application blanks can be obtained from the secretary, Dr. W. W. Yard, Room 18, Capitol Building, Denver, Colo.

DR. J. F. DE VINE, chief veterinarian of the New York State Department of Agriculture, entertained the Physicians' Club of Orange County at his home in Goshen, on the evening of April 23d last, when he addressed them on the "Relation of the Medical and Veterinary Professions." Dr. De Vine is himself a member of the club, which suggests that his relation to the medical profession is very close, his medical brethren regarding him as a physician, even though his patients are not of the human race. It is such men as Dr. De Vine who do so much to blend the two branches of medical science.

NEWS AND ITEMS.

DR. RICHARD H. POWER, of Fort D. A. Russell, Wyo., has resigned from the army service to resume general practice, entering into a partnership with Dr. J. M. Creamer, Portland, Oregon.

THE annual meeting of the Missouri Valley Veterinary Association will be held in Omaha, Neb., in July. Every one living in the Middle West should begin to plan now to attend this meeting.

THE KANSAS CITY VETERINARY COLLEGE held its annual commencement exercises on March 13 last, in the auditorium of the College Building, it was a most enjoyable occasion, and a large attendance.

RUSSIA participates in the International Hygiene Exhibition, Dresden, 1911. The Russian Duma has appropriated the sum of 102,000 roubles for the Russian Department of the International Hygiene Exhibition, Dresden, 1911.

THE INDIANA VETERINARY COLLEGE ASSOCIATION held its fourteenth annual meeting in the College Building, Indianapolis, on April 1. After the usual routine of business, which terminated with the election of officers for the ensuing year, a literary program on up-to-date therapeutics was indulged in.

DR. HORACE B. F. JERVIS writes from Oxford Rectory, Suffolk, England, under date of April 6, requesting his future numbers of the REVIEW to be sent to his home address, Houlton, Maine, and states that he has had a great course under Sir John McFadyean. He adds that the REVIEW has been a most welcome visitor while abroad.

DR. J. F. WINCHESTER, Lawrence, Mass., gave an address on "Tuberculosis, Its Cause and Its Cure," at the Riverside Congregational Church of that place, on April 25. The address was given in connection with the anti-tuberculosis campaign being waged in that city, and was interesting and instructive. The doctor had a large and very attentive audience.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alumni Ass'n, N. Y.-A. V. C.....	Sept. 6, 7, 8, 9, -10	141 W. 54th St. San Francisco.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.....	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	R. P. Lyman, Kansas City, Mo.
Arkansas Veterinary Ass'n.....	2d Fri. ea. mo.	Chicago.....	Horace E. Rice, Little Rock.
Ass'n Médicale Veterinaire Française "Laval".....	.....	San Francisco.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	.....	Ottawa	H. A. Smith, Chicago, Ill.
California State V. M. Ass'n.....	2d Tues. ea. mo	Chicago	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.....	.....	Denver	A. E. James, Ottawa.
Chicago Veterinary Society.....	.....	.....	J. M. Parks, Chicago.
Colorado State V. M. Ass'n.....	.....	.....	M. J. Woodliffe, Denver.
Connecticut V. M. Ass'n.....	.....	.....	B. K. Dow, Willimantic.
Genesee Valley V. M. Ass'n.....	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	June 28, 1910....	Macon.....	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Illinois State V. M. Ass'n.....	.....	.....	J. H. Crawford, Harvard.
Illinois V. M. and Surg. A.....	Jan. and Aug....	Louisville....	W. A. Swain, Mt. Pulaski.
Indiana Veterinary Association.....	.....	.....	E. M. Bronson, Indianapolis
Iowa Veterinary Ass'n.....	.....	.....	H. C. Simpson, Denison.
Kansas State V. M. Ass'n.....	.....	.....	B. Rogers, Manhattan.
Kentucky V. M. Ass'n.....	.....	Not decided	D. A. Piatt, Lexington.
Keystone V. M. Ass'n.....	Monthly.....	Philadelphia..	S. Lockett, Glenolden.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n.....	April 10, 1910..	Bangor.....	C. L. Blakely, Augusta.
Maryland State Vet. Society.....	.....	Baltimore....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	Monthly.....	Boston.....	Wm. T. White, Newtonville.
Michigan State V. M. Ass'n.....	.....	.....	Judson Black, Richmond.
Minnesota State V. M. Ass'n.....	July 13, 14, 1910..	Lake City....	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.....	.....	.....	J. C. Robert, Agricultural Col.
Missouri Valley V. Ass'n.....	July 1910.....	Omaha.....	B. F. Kaupp, Fort Collins, Colo.
Missouri Vet. Med. Ass'n.....	.....	St. Joseph....	F. F. Brown, Kansas City.
Montana State V. M. A.....	.....	Helena.....	W. S. Swank, Miles City.
Nebraska V. M. Ass'n.....	.....	Grand Island.	H. Jensen, Weeping Water.
New York S. V. M. Soc'y.....	.....	Ithaca.....	J. F. De Vine, Goshen.
North Carolina V. M. Ass'n.....	.....	Wilmington..	Adam Fisher, Charlotte.
North Dakota V. M. Ass'n.....	Jan. 1911.....	Fargo.....	C. H. Martin, Valley City.
North-Western Ohio V. M. A.....	Feb. and Nov. in each year....	Lima.....	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....	.....	.....	Sidney D. Myers, Wilmington
Ohio Soc. of Comparative Med..	Annually.....	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Oklahoma V. M. Ass'n.....	.....	.....	R. A. Phillips, Oklahoma City
Ontario Vet. Ass'n.....	1st week in Aug. each year....	.....	C. H. Sweetapple, Toronto.
Passaic Co. V. M. Ass'n.....	Call of Chair..	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Philippine V. M. A.....	.....	.....	Chas. G. Thomson, Manila.
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence...	J. S. Pollard, Providence
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo
Schuylkill Valley V. M. A.....	June 15, 1910..	Reading.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....	July, 1910.....	Philadelphia..	B. T. Woodward, Wash'n. D. C.
South Dakota V. M. A.....	.....	Sioux Falls...	J. A. Graham, Sioux Falls.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Iy. Oct.	Los Angeles...	J. A. Edmonds, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp.	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Call Exec. Com.	.....	R. P. Marsteller, College Sta.
Twin City V. M. Ass'n.....	2d Thu. ea. mo.	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Vermont Vet. Med. Ass'n.....	.....	.....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....	.....	.....	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—6th St., N. W.	M. Page Smith, Wash., D. C.
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.....	.....	.....	W. Herbert Lowe, Paterson.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	W. Reid Blair, N. Y. City.
Veterinary Practitioners' Club.....	Monthly.....	Jersey City...	A. F. Mount, Jersey City.
Virginia State V. M. Ass'n.....	.....	.....	W. G. Chrisman, Charlo'sv'le.
Washington State Col. V. M. A.....	1st & 3d Fri. Eve.	Pullman.....	R. G. McAlister, Pullman.
Washington State V. M. A.....	.....	Seattle.....	J. T. Seely, Seattle.
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.	Pittsburgh....	F. Weitzell, Allegheny.
Wisconsin Soc. Vet. Grad.....	Grand Rapids.	J. P. West, Madison.
York Co. (Pa.) V. M. A.....	E. S. Bausticker, York, Pa.

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